PIT AND QUARRY

JANUARY 1951

In this Issue . . .

Reviews and Forecasts of the Nonmetallic Minerals Industries • The Construction Picture • Programs of N.C.S.A., A.L.I., N.S.G.A., and N.R.M.C.A. Conventions N.S.A. Convention Report • S. Dakota Cement Plant • Hungry Horse Dam Aggregates Plant

Dragline Supplying Aggregates from the Flathead River for Hungry Horse Dam near Glacier National Park.

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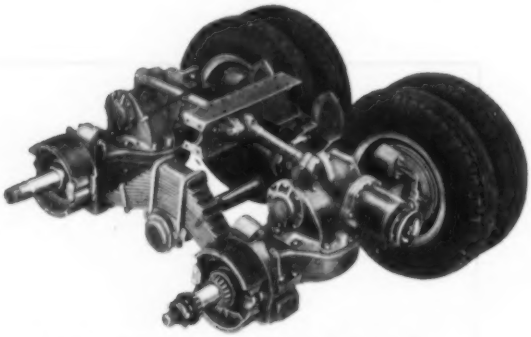
MACKS make light of heavy loads . . .

Big Mack super-duty trucks make the hard jobs look easy . . . because in design and construction they incorporate numerous outstanding features that contribute to easy maneuverability, ease of control and positive traction regardless of terrain.

Powerful Diesel Engines! Hydraulic Power Steering! Air Assist Clutch! Flexible Rubber Shock Insulators! Mack's famed Balanced Bogie and Power Divider. All are Mack features that assure power and strength for the heaviest loads; flotation and traction for the most slippery mud or sand.

Your nearest Mack branch or distributor will give you the full story on what Macks can do for you in trouble-free, uninterrupted schedules . . . greater profits through greater output at lower cost. You'll find it's a story well worth hearing.



Only Mack gives you all the advantages of the famed Balanced Bogie. Positive traction because of exclusive Power Divider. No spring twist because of Mack Rubber Shock Insulators. Inherent flexibility eliminates chassis distortion. Extended tire life because of uniform tire loading. Minimum maintenance because of simplicity of design.

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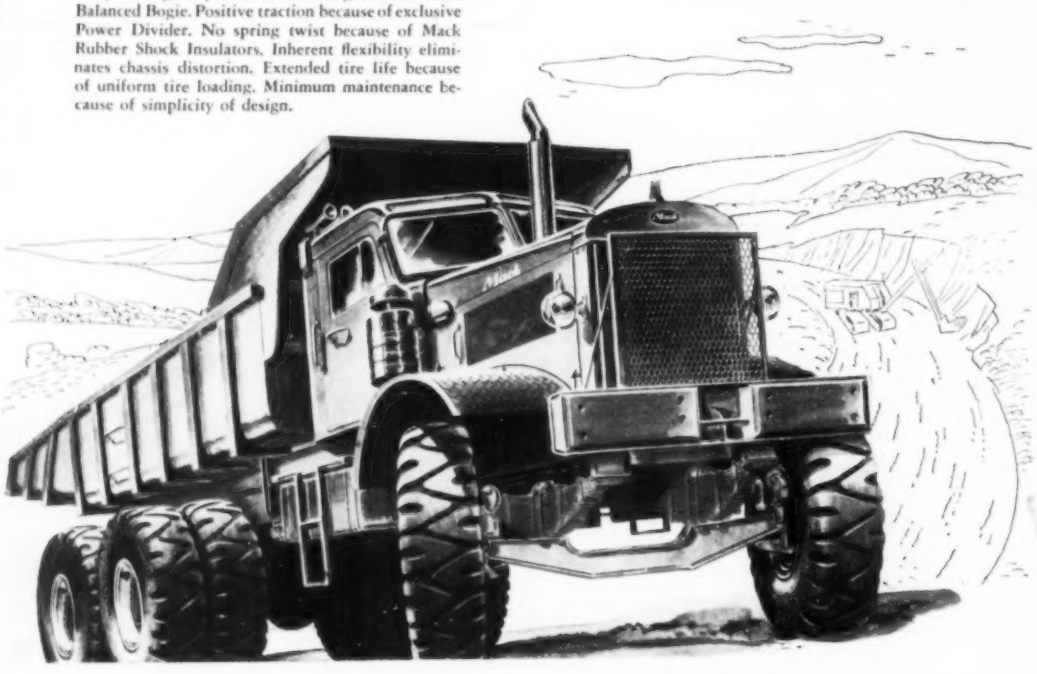
. . . outlast them all

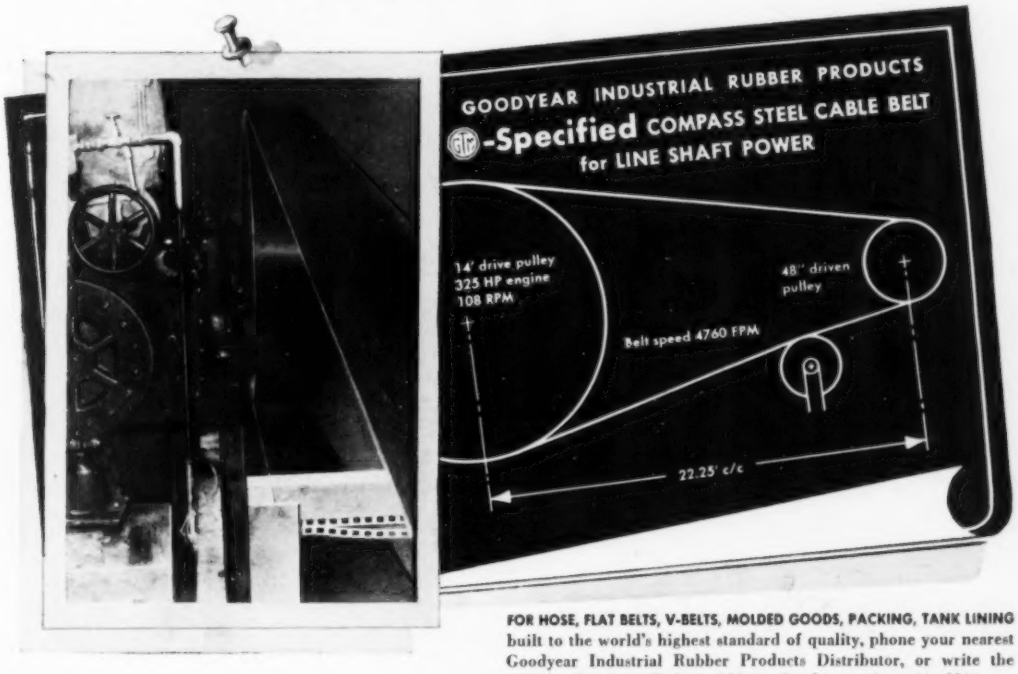
Mack Trucks, Empire State Bldg., New York 1, New York. Factories at Allentown, Pa.; Plainfield, N. J.; Long Island City, N. Y. Factory branches and distributors in all principal cities for service and parts. In Canada: Mack Trucks of Canada, Ltd.



6 TIMES LONGER SERVICE

Standard flat belts on line shaft in stone plant lasted from 4 weeks to 6 months.

Goodyear's COMPASS STEEL CABLE BELT lasted *36 months plus without a single shutdown for take-up*—and was still in excellent condition when removed due to change in power source.



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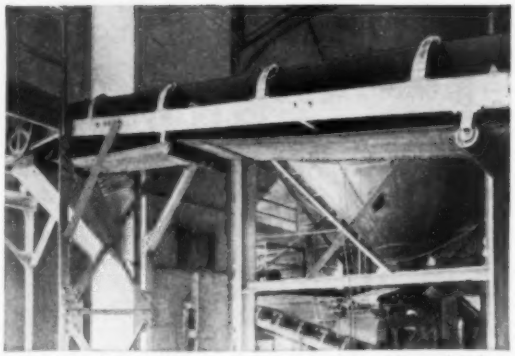
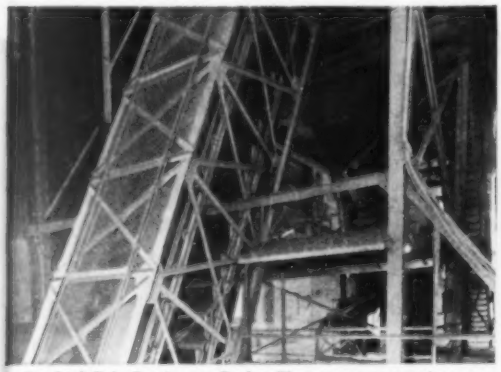
Compass—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

PIT AND QUARRY, January, 1951, Vol. 43, No. 7. Published monthly by the Complete Service Publishing Company, 528 South Clark Street, Chicago 5, Ill. Subscription price $3 for 1 year in the U. S. and possessions, Canada, Central and South America; elsewhere $3 additional for each year. Single copy 50 cents. Entered as second-class matter February 28, 1932, at the Post Office at Chicago, Ill., under the Act of March 3, 1879.

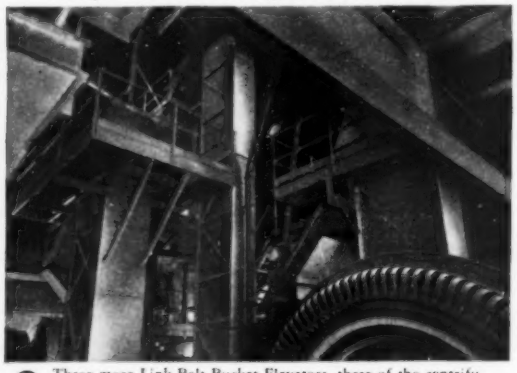
Another cement mill modernizes with LINK-BELT BUCKET ELEVATORS and CONVEYORS



1 Every invested dollar counts in this recently modernized and expanded cement mill, so material is handled on reliable, efficient bucket elevators and belt, drag chain and screw conveyors... all Link-Belt engineered, built and installed.



2 Link-Belt Continuous Bucket Elevator, super-capacity type, 62-foot centers and with buckets 42 inches long, carrying crushed cement rock. Delivery to screen over secondary crusher is thus effected in the fastest, most direct manner.



3 Three more Link-Belt Bucket Elevators, these of the centrifugal discharge type, in cement finishing department. Designed for both economy and resistance to wear, they assure peak production with quick, steady, automatic delivery.

4 Savings in space and investment by this drag chain conveyor are apparent, as it uses both runs, to carry in opposite directions. Link-Belt engineered for trouble-free, long life under severe service, its top run reclaims cement rock from silos, and the bottom run takes screened material to storage.

5 Two Link-Belt 24-inch diameter, sectional flight screw conveyors, providing continuous, uniform flow of cement in the new finishing department, both operated by Link-Belt Electrofluid Drives to assure smooth starting with minimum power consumption under any conditions of operation.

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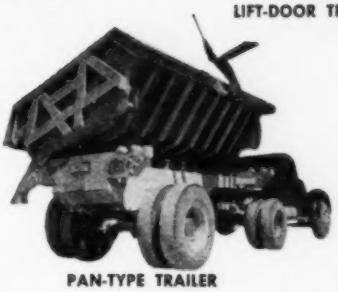
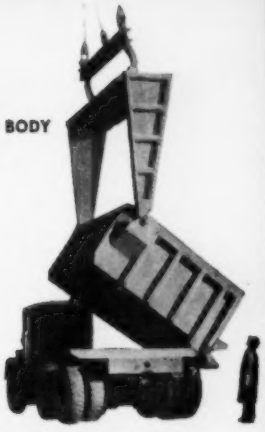
DROP-DOOR CAR

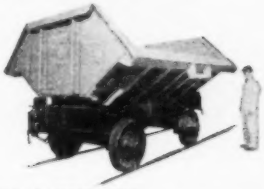


PAN-TYPE TRAILER

LIFT-DOOR TRUCK BODY



DROP-DOOR TRUCK BODY

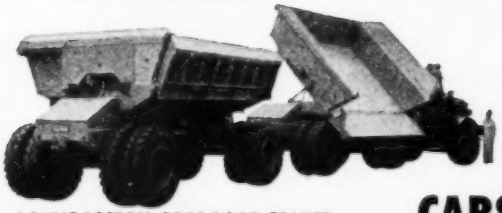


PAN-TYPE CAR (PHOENIX)

DOUBLE-BOTTOM PAN-TYPE TRAILER

LIFT-DOOR TRAILER

PAN-TYPE TRUCK BODY



DOUBLE-BOTTOM DROP-DOOR TRAILER

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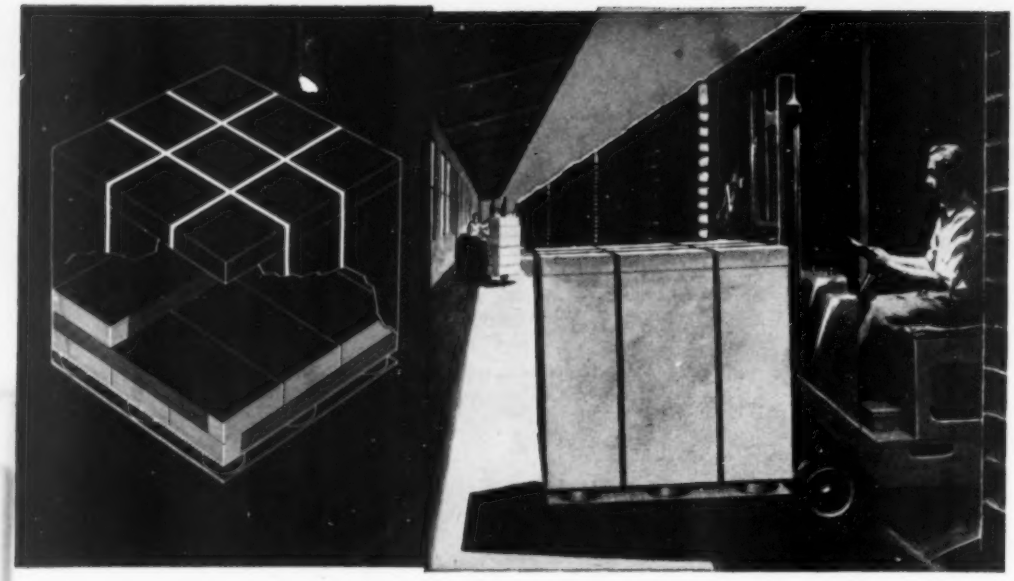

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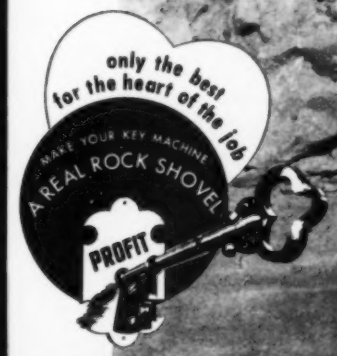

NORTHWEST

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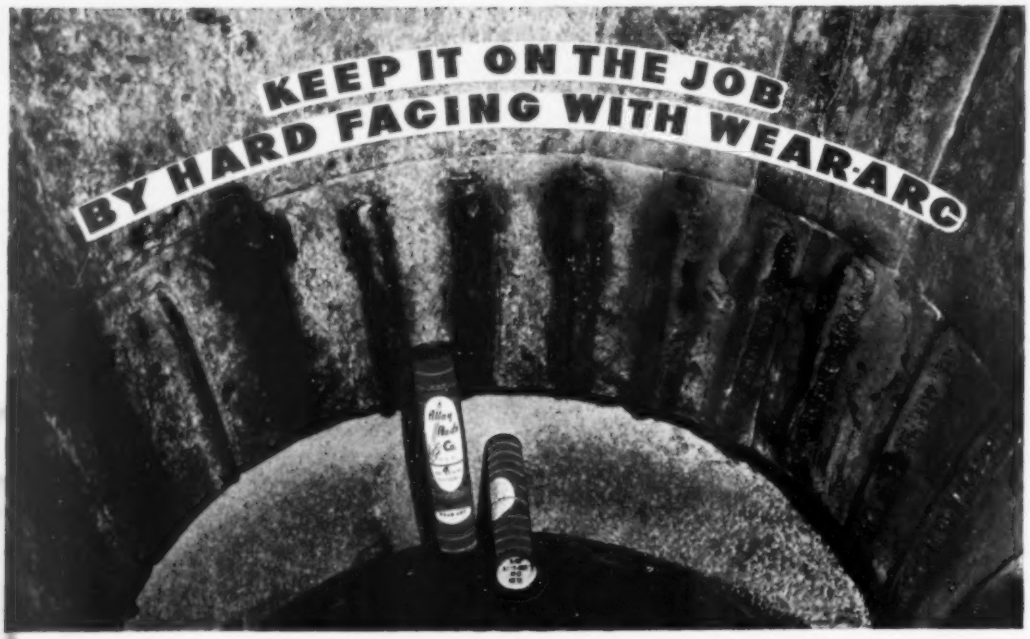

This Bell Crusher Concave was completely salvaged by welding, in vertical position, 1" round manganese steel bars to the worn manganese steel casting. The bars help hold and crush hard stone. Bars were welded with 5/32" WEAR-ARC WH electrodes and hardfaced with 3/16" WEAR-ARC 12 electrodes to provide an extremely hard wearing surface against impact and abrasion.

Bucket tooth life can be increased many times by welding manganese steel wedge bars to the worn tooth point with 3/16" WEAR-ARC WH electrodes, and by hard facing the entire surface of the tooth with 3/16" WEAR-ARC 12. electrodes.

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To reclaim worn equipment and protect parts against excessive wear, you will find one, or a combination of two, of the seven basic WEAR-ARC hard facing electrodes does the best job . . . increases life as much as four times or more.

WEAR-ARC WH is ideal for build up and high strength welds on manganese steel; WEAR-ARC 12 for providing that hard wearing surface. Ask for bulletin No. 10550, illustrating and describing properties and welding procedures for the complete line of Wear-Arc hard facing alloys.

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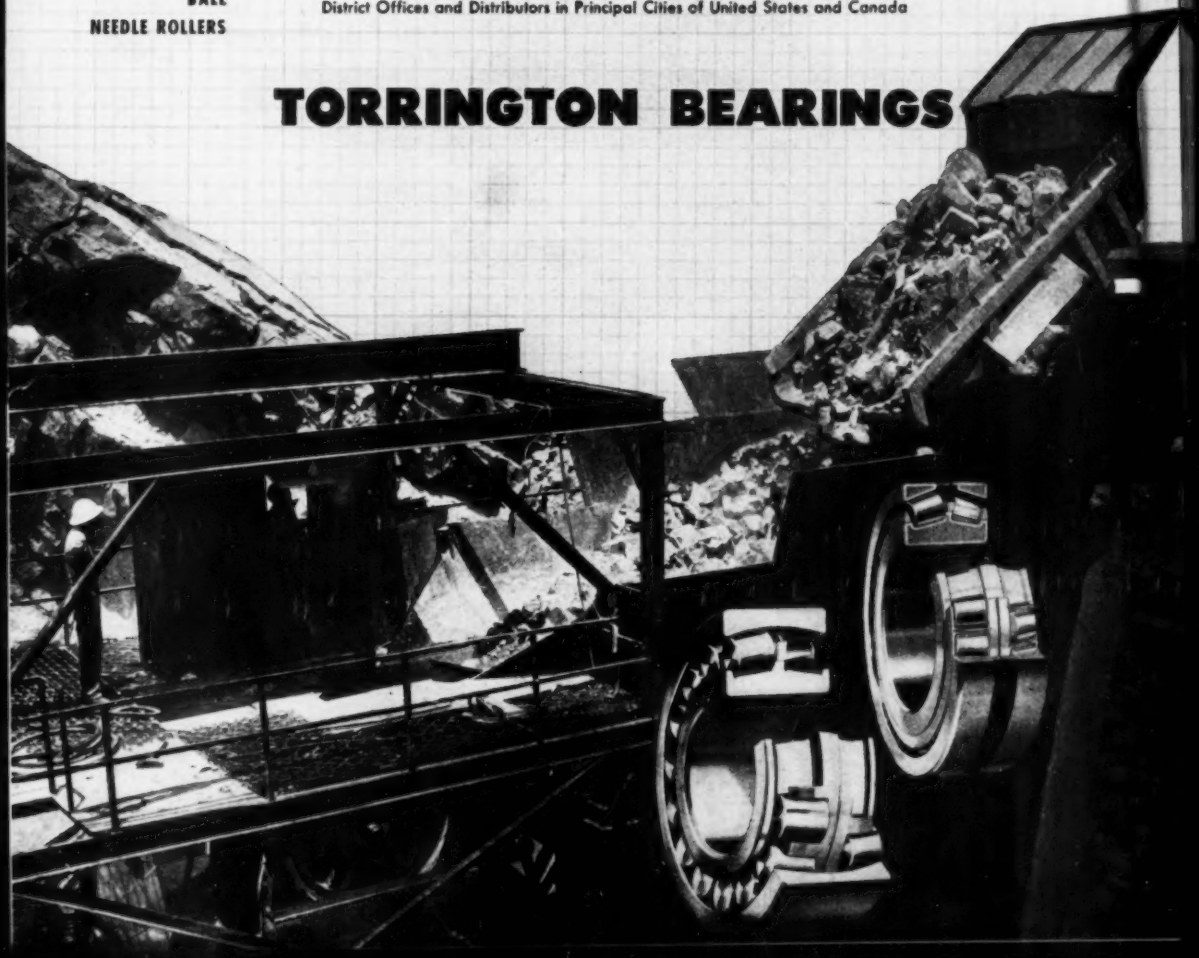
TORRINGTON BEARINGS



ROCK BOTTOM COSTS!

The "loading-expert" at Pikes Creek Quarry has tumbled the cost of rock to "rock-bottom"! The versatile "loading-expert" at this pit of Coon Certified Concrete Co. is an HT4 TRAXCAVATOR!

The HT4's versatility has reduced equipment investment . . . speeded loading in shot rock as well as on the crushed stone stockpiles. The rugged bucket is crowded full with the power of the sure-footed "Caterpillar" D4 Tractor. *One-man—on the TRAXCAVATOR seat — easily keeps big fleets of trucks on the move!*

Agile, big-production TRAXCAVATORS can keep stripping, stockpiling, pit clean-up, snow-removal and equipment-spotting on a fast-moving, cost-cutting schedule, too.

Ask your TRACKSON-"Caterpillar" Dealer how TRAXCAVATORS can cut your loading costs down to rock bottom . . . ask him to show you the model (there are five with capacities from 1/2 to 4 cubic yards) that will fit your operations. See him soon . . . or write direct to TRACKSON COMPANY, Dept. PQ-11, Milwaukee, Wisconsin.

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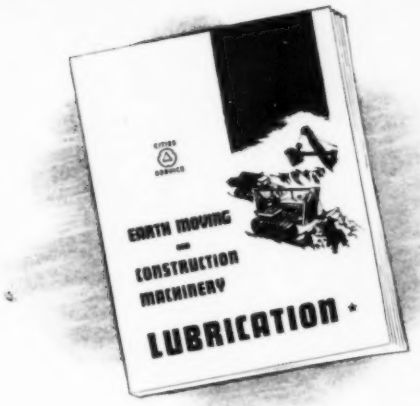

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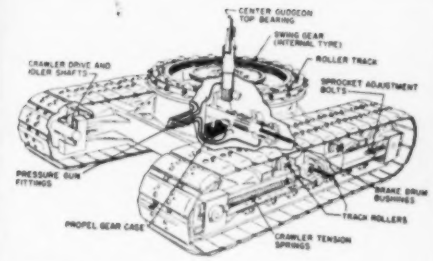
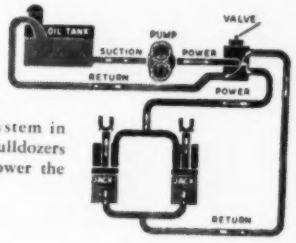


"FIG. 23

Shows internal type open gears of swing rack and one method of lubricating trunion and other shaft bearings... The 'propel' gears are enclosed and oil lubricated. The crawler track and other parts lubricated through pressure gun fittings require grease. See lubrication chart for proper type and grade..."



"FIG. 33

Hydraulic system in use on some bulldozers to raise or lower the blade."

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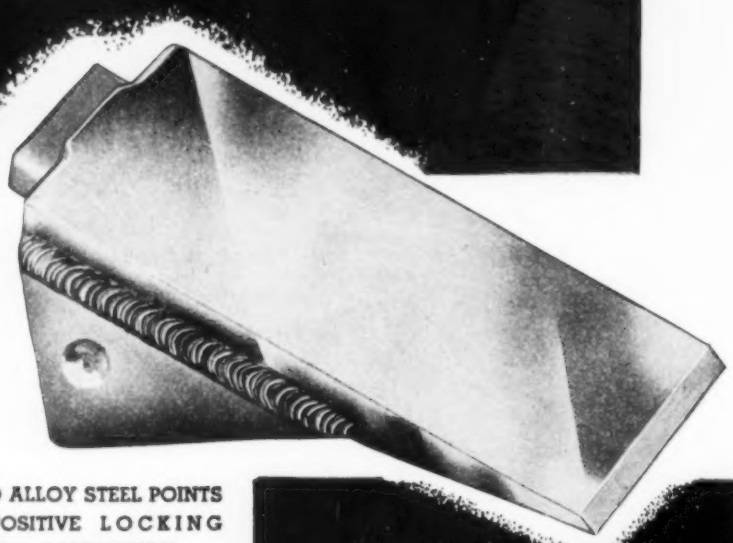
A202

Teeth that really dig!



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- POINTS STAY SHARP — GIVE MORE YARDAGE AT LESS COST.
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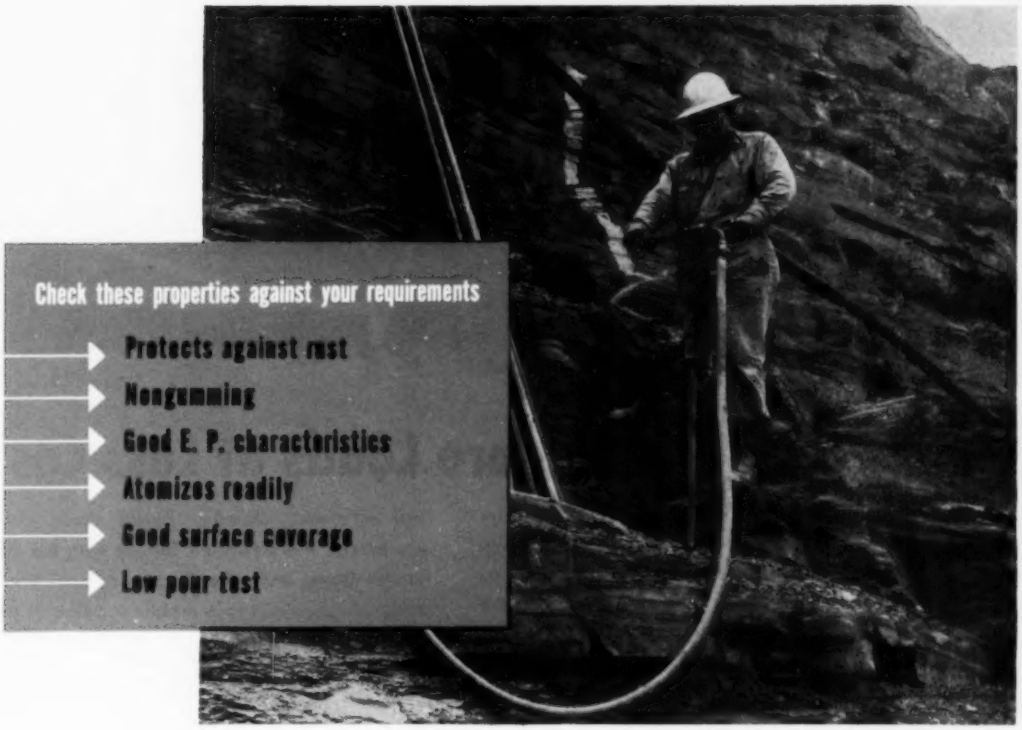

Gulf Rock Drill Oil keeps air tools clean as a whistle—free of gum and rust. Here's why! Gulf Rock Drill Oil contains an effective corrosion inhibitor that keeps moisture from contacting the metallic surfaces—there's no rust to foul up movement of internal parts.

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Then too, Gulf Rock Drill Oil provides outstanding protection against wear. It has good surface wetting ability — covers completely — and has high film strength.

Gulf Rock Drill Oil has the proper viscosity for this service—atomizes properly in air line oilers —and has a very low pour point. Its use insures cleaner tools, fewer repairs, and lower costs for maintenance.

For further information on Gulf Rock Drill Oil and for expert help on the lubrication and maintenance of other types of quarry equipment, call in a Gulf Lubrication Engineer today. Gulf Oil Corporation · Gulf Refining Company, Gulf Building, Pittsburgh, Pennsylvania.

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Haul More Loads at Less Cost!

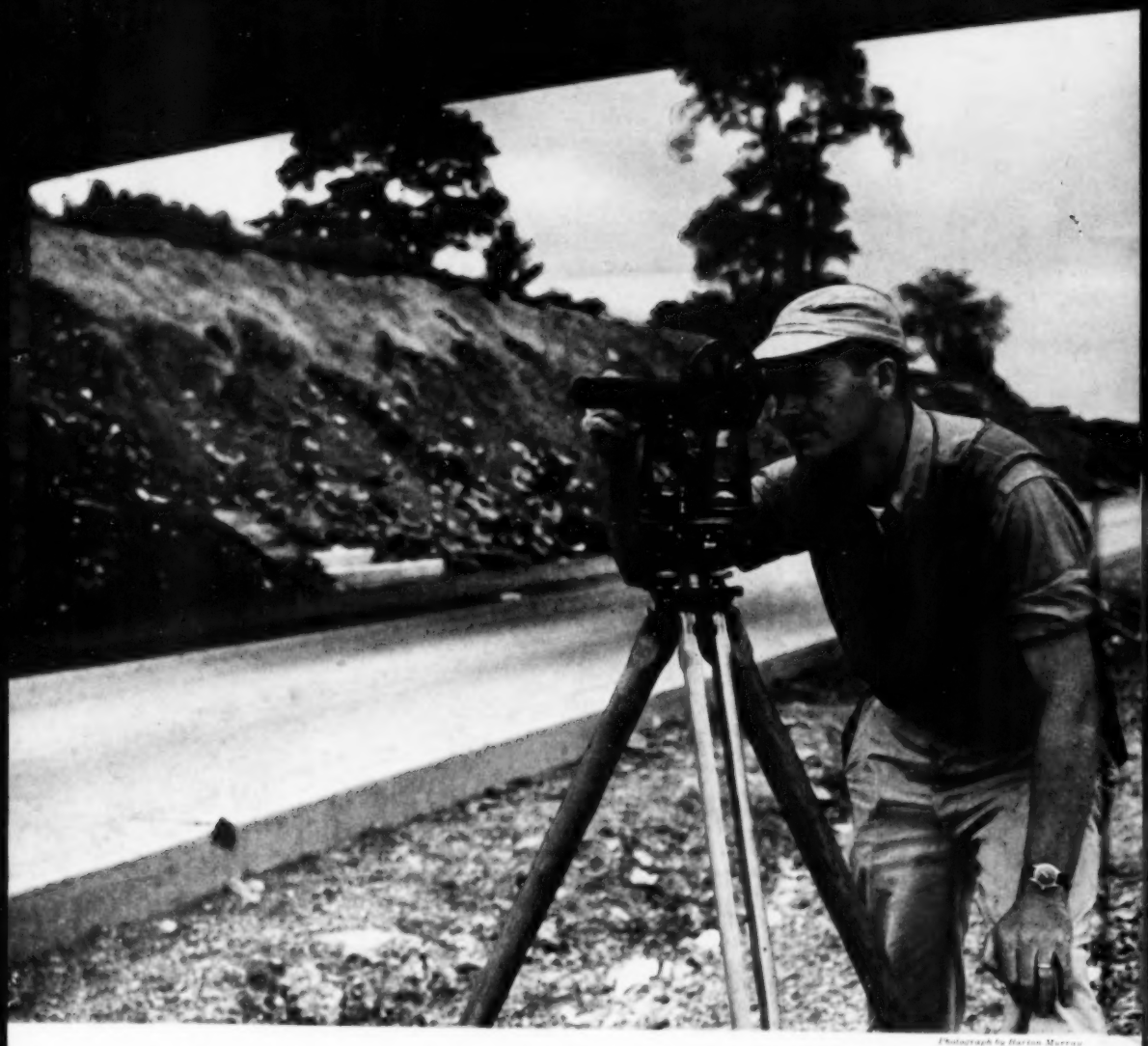
Leading contractors and industrial users buy Euclids because they are job proved for high production at the lowest cost per ton or yard moved . . . and because "Eucs" are designed and built throughout for long, efficient service in open pit mines and quarries, heavy construction and industrial work.

There is a Euclid model to meet every requirement in off-the-highway work . . . and body designs for all types of materials. Their rugged strength and stamina have made "Eucs" the standard hauling equipment of many leading operators. The Euclid Loader is built to match the speed and efficiency of other Euclid earth moving equipment. It is designed for use with the Euclid Bottom-Dump and other large capacity hauling units, and provides fast, mobile loading of practically any material.

Euclid's world-wide distributor organization assures fast, efficient service to all owners. Write for complete information on the Euclid models best suited to your job requirements and plan now to move more loads per hour at more profit per load with "Eucs" on your future off-the-highway work.

The EUCLID ROAD MACHINERY Co., CLEVELAND 17, OHIO

EUCLIDS *Move the Earth*



Photograph by Burton Murray

Take a look at tomorrow's highway

There's a great new era ahead in highway construction. You can see it in the famous Pennsylvania Turnpike, now being extended eastward to the outskirts of Philadelphia, westward to the Ohio border.

This modern "thru-way", a pioneer triumph of engineering for transportation safety, speed, comfort and convenience, stretches for *260* miles without a single stop light, crossing, sharp turn or noticeable grade. It is the nucleus of a vast super-highway transportation system that one day may link every section of the country.

Cyanamid blasting materials and the cooperation of Cyanamid explosives engineers have helped to telescope the work of years into months in moving "mountains" of earth and rock to make way for this huge project. Supplying explosives and assistance in their use for mining, quarrying and other purposes, as well as construction, is another of many Cyanamid services that are helping America build for the future.

AMERICAN *Cyanamid* COMPANY

30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

Materials for the explosives-using industries—Another of the services performed by Cyanamid

BUELL knows KILN DUST COLLECTION

that converts waste into dollars!

NOW YOU RECOVER MORE DUST
RETURNED DUST NEEDS NO PRE-PROCESSING!

High cyclone efficiency – assured by Buell's exclusive van Tongeren "Shave-Off"—boosts kiln dust recovery by tons. Harmless alkali passes through the collector. More "pure" dust is returned. No additional operation for alkali removal. The time and money Buell saves is quickly calculable!

BUELL CYCLONES CAN'T CLOG!

The secret is in the cyclone diameters. They are large! Can't clog! Not even at the outlets. The result? All cyclones in a Buell System operate with uniformly high efficiency —without interruption!

BUELL SYSTEMS SHOW NO WEAR!

Even after 12 years, Buell Systems recovering dust from pulverizers, kilns and driers, still operate with practically no maintenance. Responsible for this record are large-diameter cyclones, made possible by Buell design, that cut the abrasive effect of rock dust to the minimum. Down to zero go shutdowns and repairs!

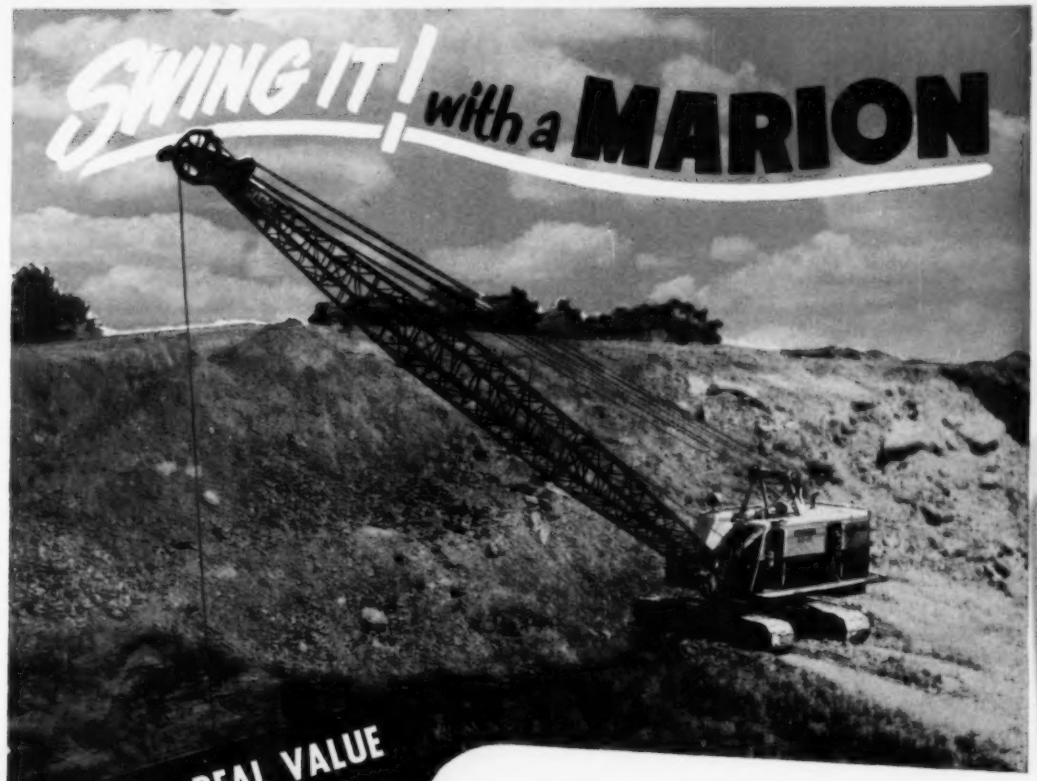
buell
Engineered Efficiency in
Dust Recovery

Our engineers will gladly consult with you on your dust recovery problems. Write today to: Buell Engineering Company, 70 Pine Street, Suite 5055, New York 5, N. Y.

No obligation, of course.

BUELL 'SF' Electric Precipitator

Kiln Dust Recovery may call for a Precipitator System, or one that combined both Cylone and Precipitator. The Buell 'SF' reflects Buell's "Engineered Efficiency" in the collection and recovery of fine dusts, fumes and vapors.



And Get REAL VALUE in DRAGLINES

Want to get more for your dragline dollars?

If so, consider what it takes to make a dragline great.

MARION, in more than 65 years of progress, knows there are no substitutes for experienced design, quality materials and careful workmanship if a dragline is to do its job well and faithfully over the years.

MARION builds draglines to **do a job**—not just to "get by" or to "meet a price." MARION builds a size and type to meet every need.

Let your nearest MARION Sales Representative or Distributor show you how easy it is to own today's outstanding Dragline Value.

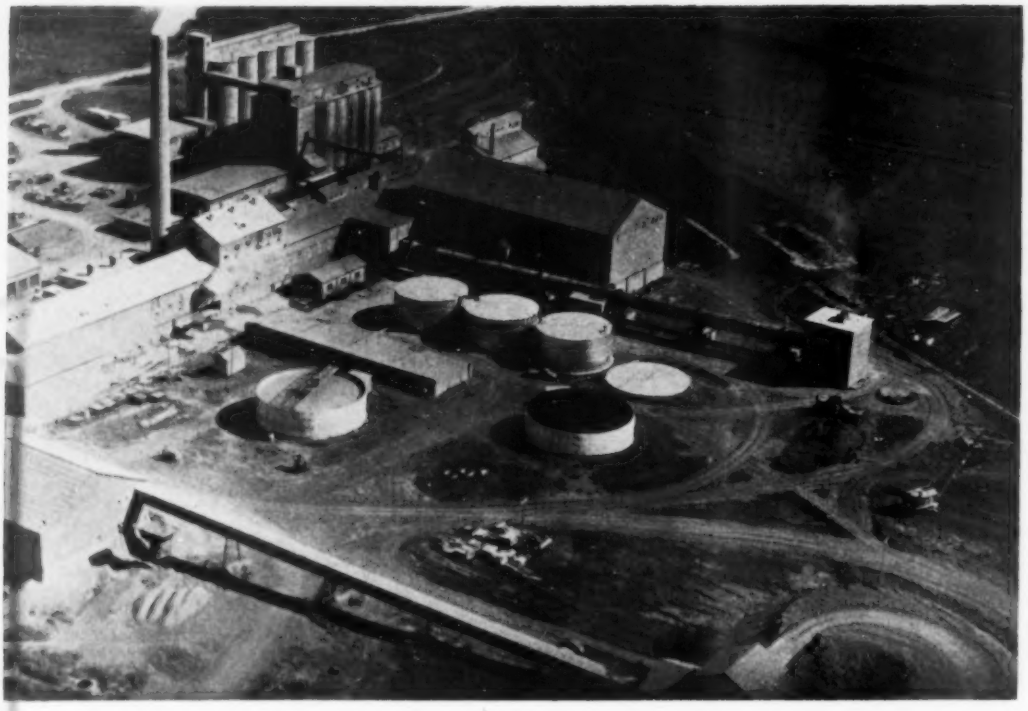
MARION

POWER SHOVEL COMPANY

MARION, OHIO, U. S. A.

Offices and Warehouses in all Principal Cities • Established 1884

ANOTHER MONUMENT IN THE BLACK HILLS



At Rapid City, South Dakota, where our four greatest presidents are eternally engraved in solid rock, is this permanently constructed cement plant of the South Dakota Cement Commission. We are glad to have contributed our part to the design and construction of the complete new plant extension, meeting the problems of a kiln installation at right angles to existing kilns, on account of limited available room, as well as prestressed concrete construction of slurry tanks, modern self-cleaning cement silos and packhouse with recirculating loads for efficient and economical operation. This plant is truly another permanent monument, contributing badly needed cement to the construction of many concrete structures, bridges, dams, buildings and roads—and the development of the area which it so successfully serves.

Our business is making your business more profitable

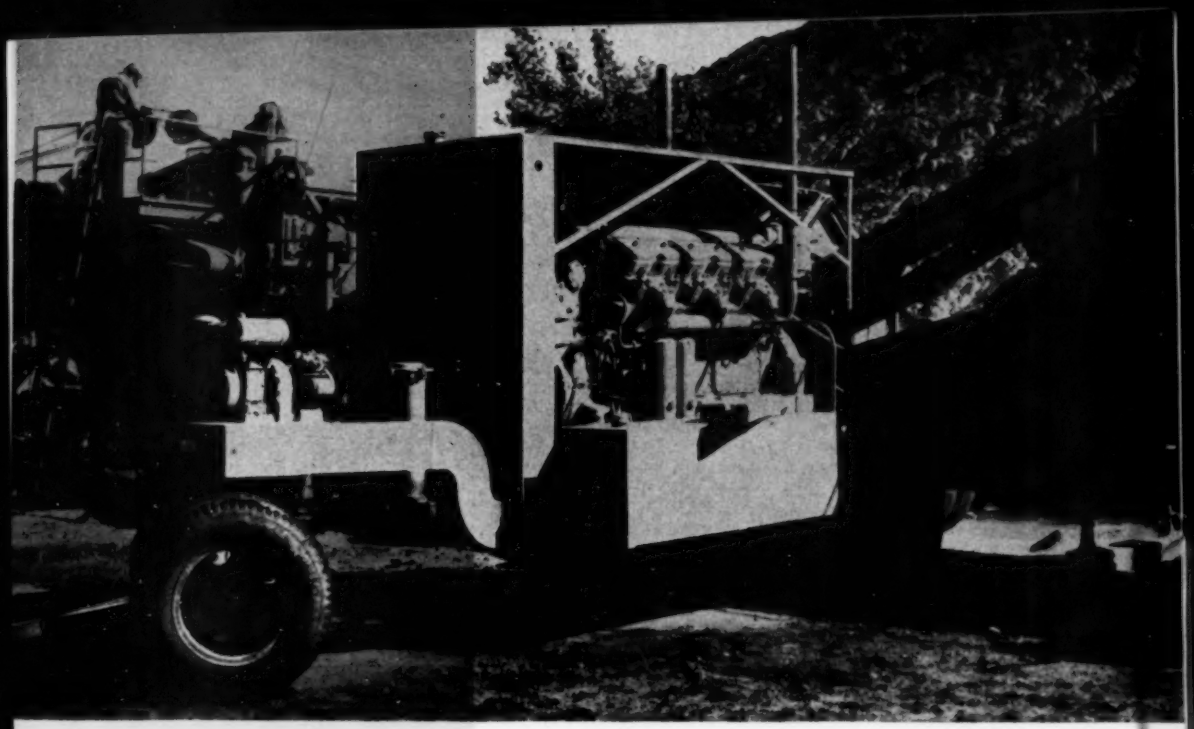
MACDONALD ENGINEERING CO.

Construction Engineers

C.P.R. Building
Toronto, Canada

188 West Randolph Street
Chicago

885 Bryant Street
San Francisco, Cal.



YOU CAN TAKE IT WITH YOU!

LOOK UNDER THE HIDE

Connecting rods for "Caterpillar" Diesels are made of medium carbon steel, drop forged and heat treated. Of "H" section design, they are rifle drilled to provide oil passage to the piston pin, and to oil-cool the piston. Connecting rods are balanced to close limits. Crankpin bearings are solid aluminum alloy, precision type. Piston-pin bushings are bronze and are precision bored. Look under the hide for built-in quality.

HERE's part of a portable crushing plant operated by Schildberg Construction Co., Greenfield, Iowa. That engine is a D386 "Caterpillar" Diesel, conservatively rated at 400 HP. It powers the primary crusher and hammer mill, while a D4600 drives the screens and conveyor and a D8800 drives the jaw crusher. The plant averages 1,200 tons of crushed rock per day for county secondary roads, as well as limestone dust for agricultural purposes. D. H. Schildberg says: "We have other 'Cat' units on our other job. Since we've seen their trouble-free operation, we specify 'Cat' Diesel power on all of our replacement engines. We get good, dependable service from our dealer."

Standardizing on "Caterpillar" power units is a good move whether you've got a stationary or portable plant. They're ruggedly built to deliver reliable performance at a minimum cost for fuel, repair and maintenance. And field records on the dustiest, toughest jobs *prove* it. What's more, your "Caterpillar" dealer is on duty to provide on-the-job service 24 hours a day!

"Cat" Diesel Engines are built in ten sizes up to 500 HP. The power they promise is the power they deliver. The importance of these engines for both military needs and maintaining the civilian economy is increased by the present situation. Talk over your engine requirements with your "Caterpillar" dealer. He has the complete stock of parts to keep your present equipment in running order and will do his utmost to make prompt delivery of new machines.

CATERPILLAR, PEORIA, ILLINOIS

CATERPILLAR

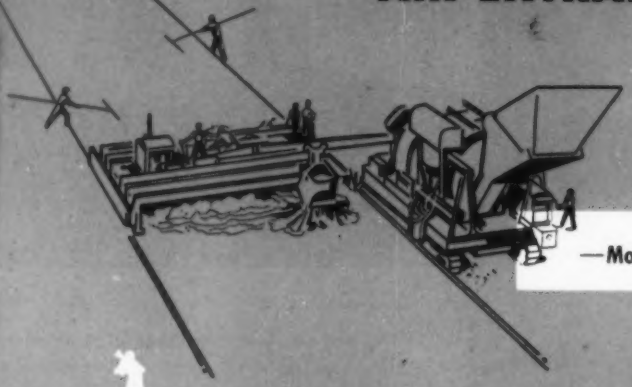
REG. U. S. PAT. OFF.

DIESEL ENGINES • TRACTORS • MOTOR GRADERS • EARTHMOVING EQUIPMENT

FIRST WITH CEMENT MANUFACTURERS . . .

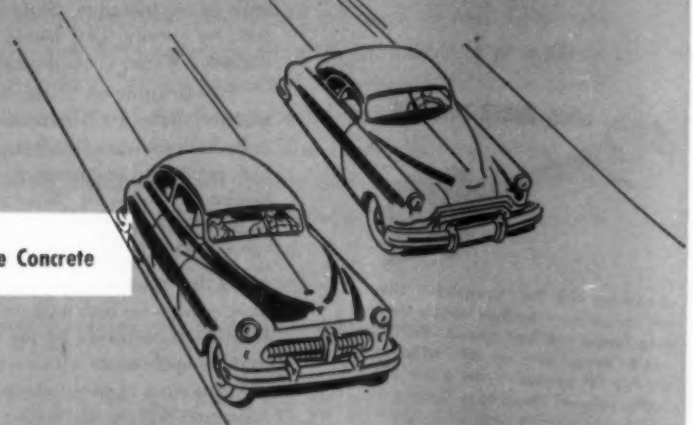
Vinsol®

AIR-ENTRAINING AGENT



—More Workable Mix

Contractors today rely on air-entrained concrete to give greater weathering and scaling resistance . . . improved workability and uniformity. When you buy air-entraining cement, be sure that it contains neutralized "Vinsol" Resin—the pioneer in air-entraining agents. Portland cement manufacturers use more "Vinsol" than all other air-entraining agents combined.



—More Durable Concrete

HERCULES POWDER COMPANY 960 King Street, Wilmington, Delaware

NVS1-1

MORE MILES OF MOTION

Homocord CONVEYOR BELTS

Round and round—up and down they go, taking the hard impact of heavy loading . . . and still coming back for more . . .

Users tell us there are more ton-miles of rugged service in Homocord Conveyor Belts than in any other. This is not accidental; we engineered Homocord specially for heavy duty conveying. It cushions load-impact. It troughs naturally, needs less training. It's flexible, yet it's strong.

Bulletin 6906, mailed on request, presents convincing proof.

Our hose, V-belts and flat belts, too, are engineered for extra long life. Ask your R M Representative.

RM

MANHATTAN RUBBER DIVISION—PASSAIC, NEW JERSEY

RAYBESTOS-MANHATTAN, INC.

Manufacturers of Mechanical Rubber Products • Rubber Covered Equipment • Radiator Hose • Fan Belts • Brake Linings • Brake Blocks • Clutch Facings • Packings Asbestos Textiles • Powdered Metal Products • Abrasive & Diamond Wheels • Bowling Balls

Metallurgy

Craftsmanship

Tolerance Control

8 REASONS WHY SKF IS PREFERRED BY ALL INDUSTRY

Integrity

Product Uniformity

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Engineering Service

Surface Finish

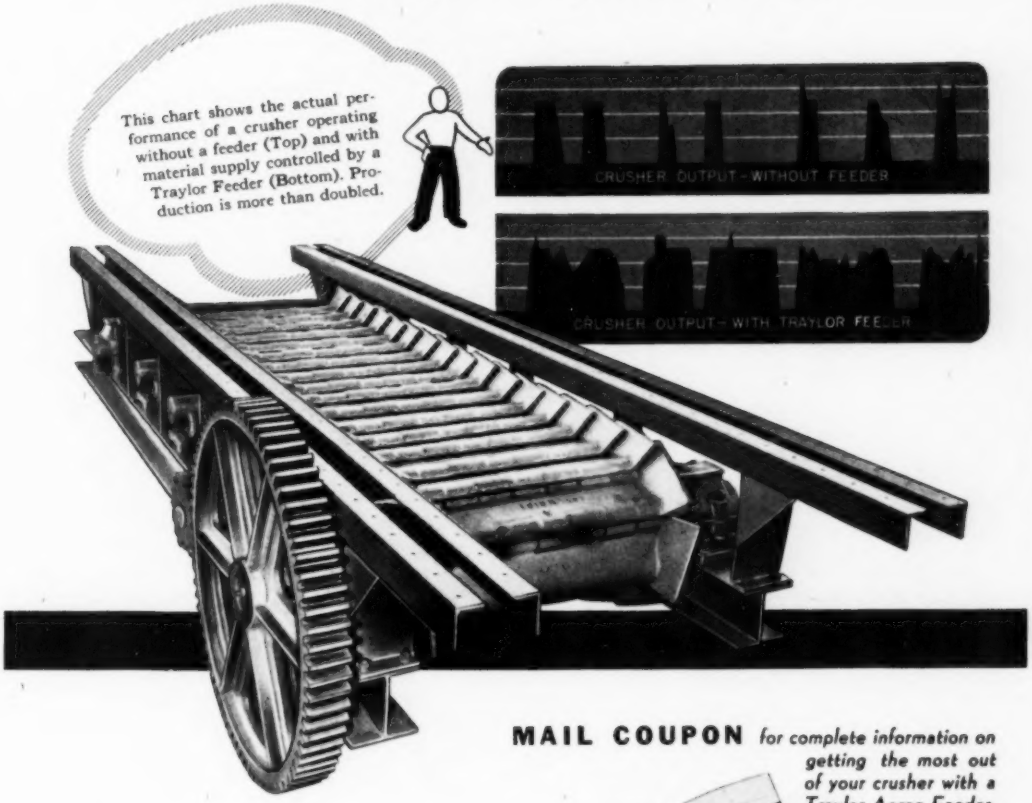
make preference for a reason your guide when you specify ball and roller bearings

Over the years, products acquire a value above and beyond their mechanical qualities—a value proved by their *acceptance* throughout industry. This is especially true of SKF ball and roller bearings, preferred by all industry for one or more of eight good reasons. So when you specify, let preference be your guide. 7200

SKF
BALL AND ROLLER BEARINGS

SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.
—manufacturers of **SKF** *and* HESS-BRIGHT *bearings.*

Take the peaks and valleys out of crusher production with a Traylor Apron Feeder


This chart shows the actual performance of a crusher operating without a feeder (Top) and with material supply controlled by a Traylor Feeder (Bottom). Production is more than doubled.
CRUSHER OUTPUT - WITHOUT FEEDER
CRUSHER OUTPUT - WITH TRAYLOR FEEDER

Crushers supplied with an even flow of material operate at peak efficiency . . . produce more tons per dollar of operating cost. Traylor Apron Feeders assure a controlled rate of feed . . . maximum crusher production with minimum loss of power and time. Traylor Apron Feeders are built in widths from 30" to 84" in any practical lengths. For more complete information on Traylor Apron Feeders, fill out and mail the coupon today.

MAIL COUPON *for complete information on getting the most out of your crusher with a Traylor Apron Feeder.*

TRAYLOR ENGINEERING & MANUFACTURING CO.
308 MILL ST., ALLENTOWN, PA.

I would like to increase the efficiency of my crusher. Give me details on a Traylor Apron Feeder.

Name _____

Company _____

Address _____

_____

SALES OFFICES: New York, N.Y.; Chicago, Ill., Los Angeles, Calif.
Canadian Mfrs: Canadian Vickers, Ltd, Montreal, P.Q.

Traylor

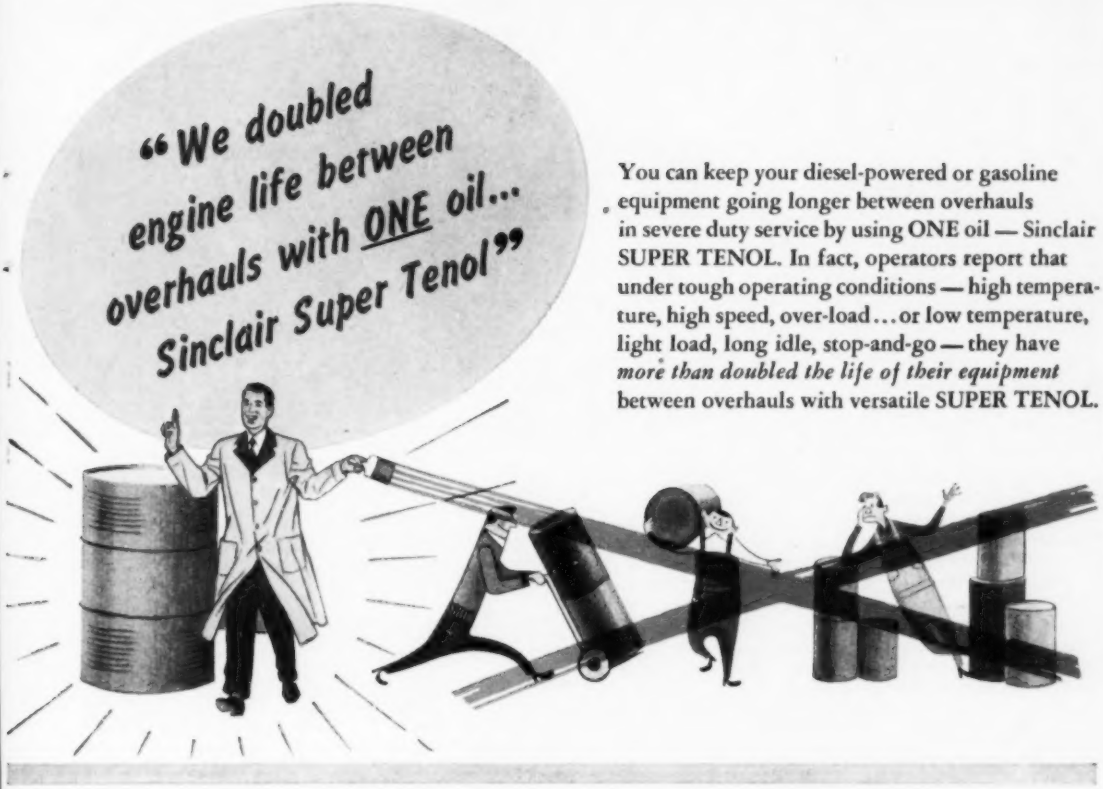
Rotary Kilns, Coolers and Dryers · Grinding Mills
Jaw, Reduction and Gyratory Crushers · Crushing Rolls

A "TRAYLOR" LEADS TO GREATER PROFITS

"Change DOWNTIME into WORK TIME with this ONE OIL and ONE GREASE"

"We speeded and improved lubrication with ONE grease... Sinclair Litholine"

SINCLAIR



You can keep your diesel-powered or gasoline equipment going longer between overhauls in severe duty service by using ONE oil — Sinclair SUPER TENOL. In fact, operators report that under tough operating conditions — high temperature, high speed, over-load... or low temperature, light load, long idle, stop-and-go — they have *more than doubled the life of their equipment* between overhauls with versatile SUPER TENOL.

Consider how you can cut downtime and grease inventories by using ONE single grease for the complete lubrication job. Sinclair Litholine provides better lubrication than long-established specialized greases. And that means for *all* lubrication points — chassis, wheel bearings, water pumps, universal joints — in winter or summer, under all kinds of operating conditions. Litholine gives you —

1. Superior protective lubrication at *every* point.
2. No danger of costly misapplication.
3. Quicker servicing, less downtime.
4. Smaller grease inventories. One grease instead of from three to four.
5. Fewer dispensing units.
6. Less chance for contamination.
7. Simplified purchasing and distribution.
8. Less wastage.

Sinclair will gladly send you a folder describing demonstrations showing the superiority of Litholine over other greases.

SUPER TENOL AND LITHOLINE

PLAN
LOAD
DETONATE

For better BLASTING!

WITH PRIMACORD

The many advantages of Primacord make it the choice where safety, simplicity of hookup, and ease of handling are factors to be considered.

Primacord, because of its speed, detonates practically instantaneously, yet the infinitesimal lag between holes and rows of holes obtains greatest results from a minimum quantity of explosives.

Because it cannot be set off by friction, sparks or ordinary shock and is impervious to stray electrical currents, Primacord offers a safety factor to many blasting operations.

Primacord is wound on easy to handle lightweight spools, so that loading and hook-ups are done easily.

4 Types of Primacord

Primacord is made in four standard types, each designed to obtain greatest effectiveness under varying working conditions — each with the same high degree of dependability.

PLAIN PRIMACORD. For shallow holes and surface trunkline use, Plain Primacord is recommended. Although light in weight (a 1000-foot spool weighs only 19 lbs.) it has tensile strength of 113 lbs.

REINFORCED PRIMACORD. For deep holes where extra tensile strength or resistance to abrasion are desirable, depend on Reinforced Primacord. Tough, but resilient and easy to handle, Reinforced Primacord has the same detonating qualities as other Primacord-Bickford types. Weight 20 lbs. per 1000-ft. spool.

WIRE COUNTERED PRIMACORD. Armored with closely stranded brass wire, Wire Countered Primacord is the answer to problems involving deep, ragged holes and high abrasive conditions. The wire sheath also increases the tensile strength to 220 lbs. Weight per 1000-ft. spool, 35 lbs.

PLASTIC REINFORCED PRIMACORD. To meet the demand for a strong, waterproof detonating cord resistant to abrasion and to the acids commonly encountered, Ensign-Bickford developed Plastic Reinforced Primacord. With tensile strength of 250 lbs., users find it ideal for extremely deep holes, river crossings, or where water is a problem. Weighs 22 lbs. per 1000-ft. spool.

Blasters who use Primacord consistently agree there is no substitute. For complete information, consult your explosives supplier . . . or write to us direct.

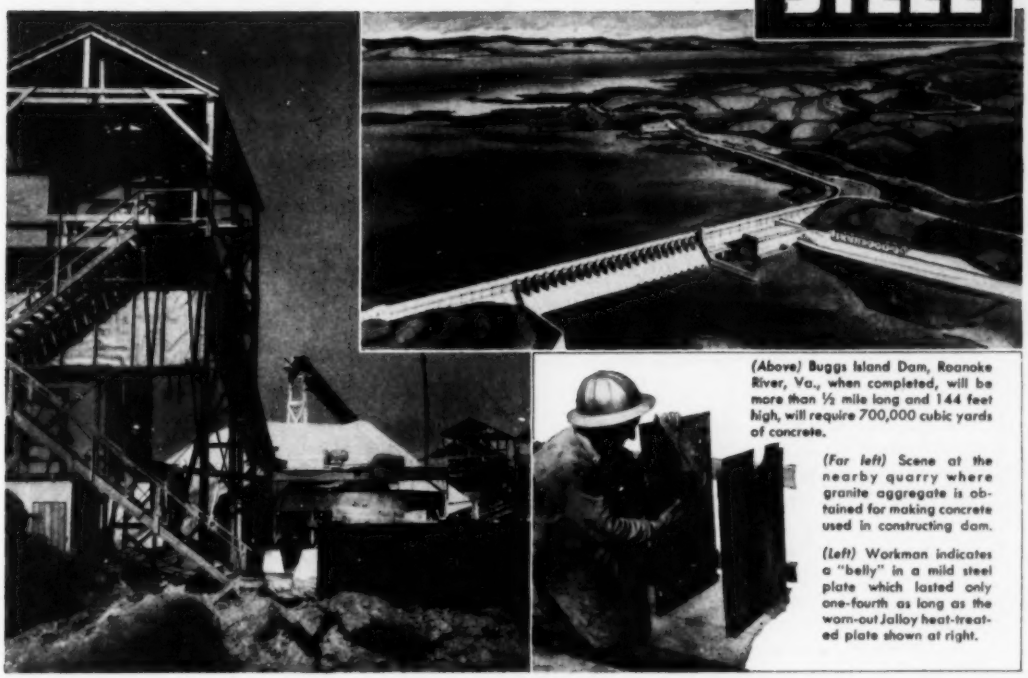
THE ENSIGN-BICKFORD COMPANY
Simsbury, Connecticut
Also Ensign-Bickford Safety Fuse — Since 1836

P-51

PRIMACORD-BICKFORD Detonating • Fuse •

$12,500 SAVED in construction equipment maintenance with first 45 tons of Heat-treated JALLOY STEEL PLATE

J&L STEEL



(Above) Buggs Island Dam, Roanoke River, Va., when completed, will be more than ½ mile long and 144 feet high, will require 700,000 cubic yards of concrete.

(Far left) Scene at the nearby quarry where granite aggregate is obtained for making concrete used in constructing dam.

(Left) Workman indicates a "belly" in a mild steel plate which lasted only one-fourth as long as the worn-out Jalloy heat-treated plate shown at right.

JALLOY Heat-Treated Plate lasts 4 to 5 times as long as mild steel in handling crushed stone for Buggs Island Dam

Buggs Island Dam, across the Roanoke River near South Hill, Va., is being constructed by Department of the Army, Corps of Engineers, Norfolk District. Granite is blasted from a quarry three miles from the dam site and crushed into various sizes. In moving and handling this hard abrasive rock, *worthwhile* savings are being made by using heat-treated JALLOY plate for: Chutes, screening equipment, truck bodies, shovel-dipper teeth and similar materials-handling applications.

At the quarry, operated by Ralph E. Mills and Gorman Bros., Inc., direct comparisons show that heat-treated JALLOY plate lasts an average of 5 times as long as mild steel. During the first 11 months, approximately 25 tons of JALLOY heat-treated plate were installed at the quarry.

At the dam, Jones-Tompkins-Wright, Contractors, installed approximately 20 tons of heat-treated JALLOY plate during the first 10 months of operations. Here JALLOY lasts on an average of 4 times as long as mild steel.

At both locations, approximately 45 tons of JALLOY heat-treated plate have effected a saving in the cost of steel for maintenance alone of more than $10,000. Labor savings in man-hours worked by maintenance crews have been conservatively estimated at more than $2,500.

Wherever heat-treated JALLOY plate is used to resist abrasion and impact, similar results are being obtained. Little wonder that this manganese moly steel is becoming so popular in materials-handling operations. Let us send you our booklet, "For Longer Wear . . . Less Repair." It describes how others are saving money with heat-treated JALLOY Steel Plate, The Mining and Quarrying Steel.

Jones & Laughlin Steel Corporation
465 Jones & Laughlin Building
Pittsburgh 30, Pa.

Please send me a copy of: "For Longer Wear . . . Less Repair—JALLOY—J&L Special Alloy Steel."

NAME _____

COMPANY _____

ADDRESS _____

JONES & LAUGHLIN STEEL CORPORATION

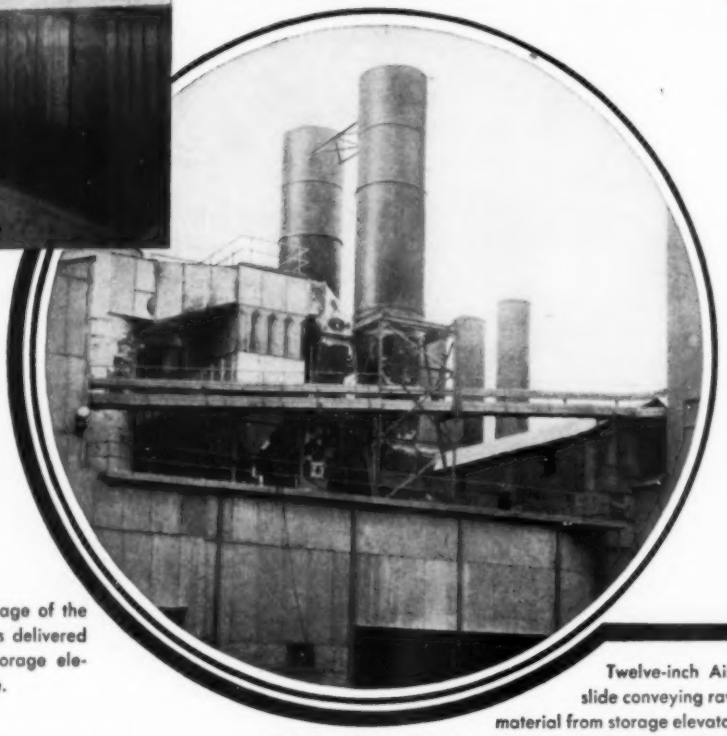
From its own raw materials, J&L manufactures a full line of carbon steel products, as well as certain products in OTISCOLOY *and* JALLOY *(hi-tensile steels).*

PRINCIPAL PRODUCTS: HOT ROLLED AND COLD FINISHED BARS AND SHAPES • STRUCTURAL SHAPES • HOT AND COLD ROLLED STRIP AND SHEETS • TUBULAR, WIRE AND TIN MILL PRODUCTS • "PRECISIONBILT" WIRE ROPE • COAL CHEMICALS

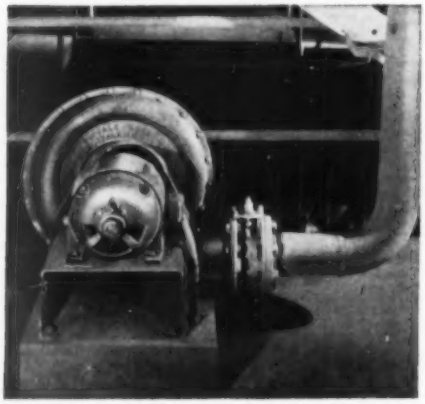
applications unlimited

F-H Airslide®

Continuation of 12-inch Airslide (upper) from raw-material storage elevator, showing motor-operated, F-H Side-Discharge Valve for delivery of material to constant-head feeder box and feeder screw. The 8-inch (lower) Airslide conveys material from kiln-feed elevator to the same feeder box. Overflow returns to kiln-feed storage bins. In the event of a stoppage of the kiln-feed elevator, material is delivered direct from raw-material storage elevator by the 12-inch Airslide.

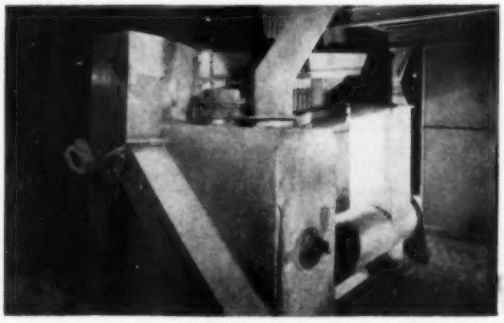


Twelve-inch Airslide conveying raw material from storage elevator to kiln-feed floor. Capacity of Airslide, 3000 cu. ft. an hour.



Fan Type blower which serves the kiln-feed Airslides.

7285 FH-18T



One of the two constant-head, kiln-feeder boxes and feeder screw, showing 12-in. (upper) Airslide, storage to kiln feed; and 8-in. (lower) Airslide, elevator to kiln feed. A Fuller Material-Level Indicator is shown on top of feeder box.

. . . . efficiency ceiling high

There's virtually no practical application to which cement mill operators haven't put the F-H Airslide Conveyor. They use it to convey raw materials from pulverizers to storage; from storage to kiln-feed bins; finished cement from pulverizers to mechanical air separators; separator tailings and finished cement from separators; flat-bottom storage bins for delivery to packer bins. They use it to handle dust from collectors, hot precipitator dust and clinker dust. And that's only part of the list.

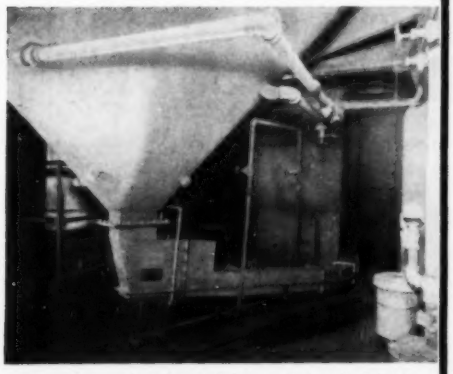
There are sound reasons for this widespread and enthusiastic acceptance of the Airslide by economy minded operators. They've found that the Airslide features extremely low power consumption and that maintenance costs are negligible. It's dustless in operation, requires less space and no lubrication, keeps occupational hazards at the minimum. Expensive drives, such as chains, belts and speed reducers are eliminated. Interruptions in production are reduced and there are fewer spare parts that need to be carried in stock.

Some of the many possibilities of the Airslide are illustrated in these views of an installation in a large eastern plant. There, the Airslide is used to convey raw materials from storage to kiln-feed bins. A study of the pictures and the isometric drawing will show how you can adapt the Airslide to your own operations. Fuller engineers will be glad to survey your present conveyor layouts and make suggestions that may well lead to more efficient, more economical conveying. Naturally, there's no obligation on your part.

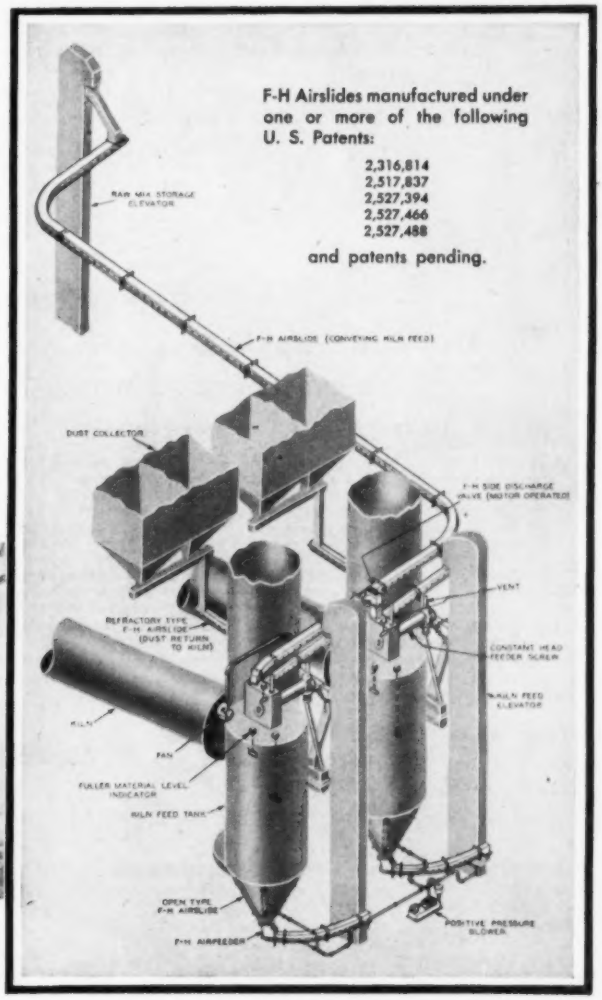
FULLER COMPANY
Catasauqua, Pennsylvania
Chicago 3—120 So. LaSalle St.
San Francisco 4—420 Chancery Bldg.

fuller

DRY MATERIAL CONVEYING SYSTEMS AND COOLERS • COMPRESSORS AND VACUUM PUMPS FEEDERS AND ASSOCIATED EQUIPMENT



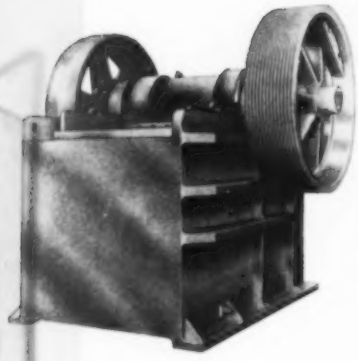
One of two 8-inch Airslides and 6-inch F-H Airfeeders reclaiming raw material from kiln-feed storage bins and conveying to elevator for delivery to kiln-feed Airslides. Air piping entering side of cone serves four 6-inch Airslides installed in cone to assist in conveying.



F-H Airslide System Layout

GREATER PRODUCTION CAPACITY *for* INCREASED PLANT EFFICIENCY LOWER OPERATING COSTS *INSTALL*

for crushing

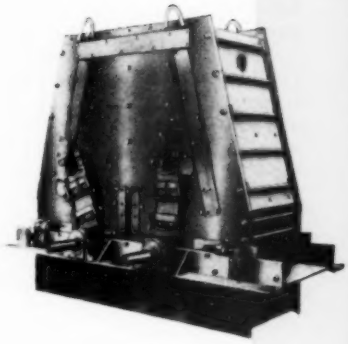


JAW CRUSHERS

HERE'S the high capacity primary crusher that sets the production pace for your entire plant! Cedarapids quality-built Jaw Crushers are the overhead eccentric type with one stationary jaw and one movable jaw and are engineered for *extra capacity* with smooth, steady performance plus low operating and maintenance costs. There's a size for every need from 6″ x 12″ to 32″ x 40″.

DOUBLE IMPELLER IMPACT BREAKERS

THIS is the unit that assures greater hourly tonnage capacities of the cubical shaped aggregate required in so many specifications today. Used for both primary and secondary reduction in many applications, its extremely high ratio of reduction eliminates much accessory equipment such as secondary crushers, screens, conveyors, etc. Less horsepower required because a high percent of material is broken in suspension. 50% less contact of stone on metal reduces wear on working parts. Four sizes available.



Use Cedarapids Crushers in your plant to be sure of meeting production schedules

TWIN JAW CRUSHERS

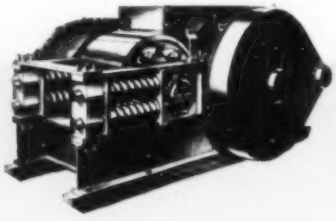
YOU get approximately twice as much capacity with a Cedarapids Twin Jaw Crusher as with a single-jaw crusher of the same size. This increased capacity is ideal for maintaining high production in pits with 50% or 60% of oversize material to be crushed. Rubbing between jaw plates is eliminated because both jaws move in-and-down as well as out-and-away in synchronized motion. A complete range of sizes.

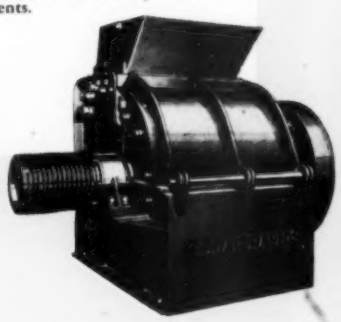
ROLL CRUSHERS

For secondary crushing, Cedarapids Roll Crushers assure high production of the required smaller size aggregates. Manganese steel roll shells, either smooth or corrugated, and large, heavy flywheels, plus other heavy-duty construction features provide maximum long life and economical operation. Cedarapids exclusive patented safety shear plates prevent crusher damage from foreign material. Sizes range from 16″ x 16″ to 40″ x 24″.

HAMMERMILLS

Cedarapids Hammermills feature a revolutionary principle of crushing to give more tons per hour of finer quality finished products than similar types of equipment of comparable size. They produce either crushed limestone up to 1½″, or agricultural lime, or a percentage of both, depending on the setting of the grates and speed of the rotor. Three sizes . . . 2033, 3033, and 4033, will meet all your requirements.





THE IOWA LINE *of Material Handling Equipment Includes:*

ROCK AND GRAVEL CRUSHERS • BELT CONVEYORS • STEEL BINS • BUCKET ELEVATORS • VIBRATOR AND REVOLVING SCREENS • UNITIZED ROCK AND GRAVEL PLANTS • FEEDERS • TRAPS • PORTABLE POWER CONVEYORS • PORTABLE STONE AND GRAVEL PLANTS • REDUCTION CRUSHERS • BATCH TYPE AND VOLUMETRIC TYPE ASPHALT PLANTS • HAMMERMILLS • DRAG SCRAPER TANKS • WASHING PLANTS • SOIL COMPACTION UNITS • STEEL TRUCKS AND TRAILERS • KUBIT IMPACT BREAKERS • DOUBLE IMPELLER IMPACT BREAKERS

CEDARAPIDS

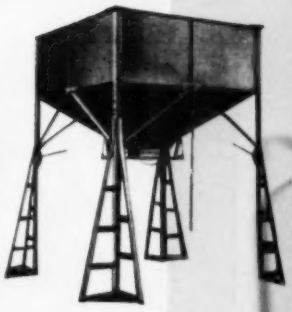
AGGREGATE PRODUCING UNITS *Now!*

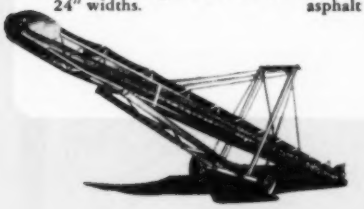
for material handling

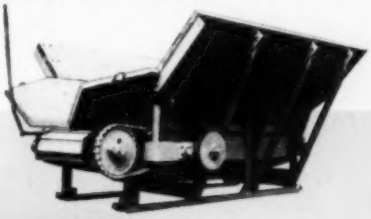
CONVEYORS
Cedarapids portable belt conveyors with their own power unit are the flexible and economical answer to aggregate handling problems. Either the channel frame or lattice frame type can be supplied in 30', 40' or 50' lengths and 18" or 24" widths.

FEEDERS
Apron type or reciprocating feeders provide a smooth, workable flow of material to crushers, conveyors and bucket elevators, preventing overloads and surges. Available in a wide variety of sizes for all types of aggregate or asphalt plants.

BINS
All-steel storage and loading bins give sturdy, dependable storage facilities for all types of prepared material. Jack leg and knockdown types are available with or without partitions. Special sizes and types can be built to order.







for screening

HORIZONTAL VIBRATING SCREENS

Here is the most efficient screen available today! Its better screening action, highly accurate gradation and large capacity combine to give you faster and more profitable screening at lower cost. Sizes range from 36" x 8' to 48" x 14' in single, double or triple deck styles. In addition, the Cedarapids line contains screens for special uses in a wide variety of sizes, including ag-lime screens, inclined vibrator screens and revolving screens.

for complete plants

From the Single Pass Plant or Pitmaster for the smaller jobs... to the Junior or Master Tandem... or the complete 4-unit Unitized Plant for the largest operations, there's a Cedarapids complete portable aggregate plant in a size and type to fit your pocketbook as well as your production needs.

Your Cedarapids distributor will gladly give you production facts and figures on all Cedarapids equipment, including the complete line of portable bituminous mixing plants. Call on him today.

IOWA MANUFACTURING COMPANY

Cedar Rapids, Iowa, U. S. A.

Cedarapids

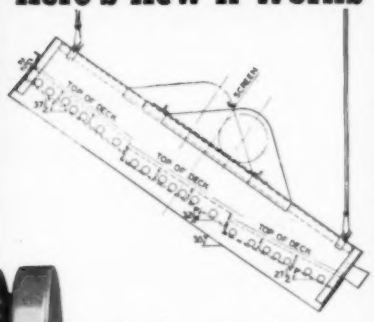
Built by IOWA

GET HIGH CAPACITY, ACCURATE SIZING

For Fine Materials

NEW RIPL-FLO SCREEN WITH "Tri-Slope" DECK!

Here's How it Works



- The first section of the screen deck is sloped steeply for quick stratification, rapid conveying.
- The center section is set at less slope to slow down conveying rate.
- The discharge end section is set at a flatter angle than the second section to further reduce the rate of material travel.

The "Tri-Slope" deck can be used for screening material in ½x0, ⅜x0 and ¼x0 sizes. *Ripl-Flo* screens with "Tri-Slope" deck are available in 3x9, 4x9, 5x9 and 6x9 ft sizes. Single deck or single deck with conventional top deck. Send for **Bulletin 25B6280B.**

Ripl-Flo and Texrope are Allis-Chalmers trademarks.

Now—Allis-Chalmers offers you a vibrating screen with a new deck designed to control rate of material travel for more efficient screening of fine materials.

Ripl-Flo screens with new "Tri-Slope" deck feature a deck divided into three sections, each at a decreasing slope to provide a high rate of travel at feed end to reduce bed thickness and obtain rapid stratification . . . a retarded conveying rate on the second section . . . a further reduced rate at the discharge end as the bed becomes thinner, to pass marginal pieces through the screen.

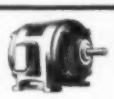
"Sta-Kleen" deck construction makes it possible to screen with higher surface moisture than was previously considered practical . . . and get increased screening capacity.

Special shaped rubber balls bounce between the screen surface and a ball retaining deck located several inches below the screen cloth. These balls dislodge fine particles clinging to the screen cloth. For more facts, contact your A-C sales office, or write Allis-Chalmers, Milwaukee 1, Wis.

ALLIS-CHALMERS

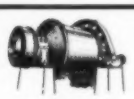
A-3256

Sales Offices in Principal Cities in the U. S. A. Distributors Throughout the World.


Motors

Control

Texrope Drives


Grinding Mills

Crushers

Kilns, Coolers, Dryers

IT PAYS TO OWN THE BEST

KENNEDY GYRATORY CRUSHERS ARE
BUILT STRONGER TO LAST LONGER

SYNCHRONOUS MOTOR BUILT INTO PULLEY ASSEMBLY

•

FORCED FEED LUBRICATION

•

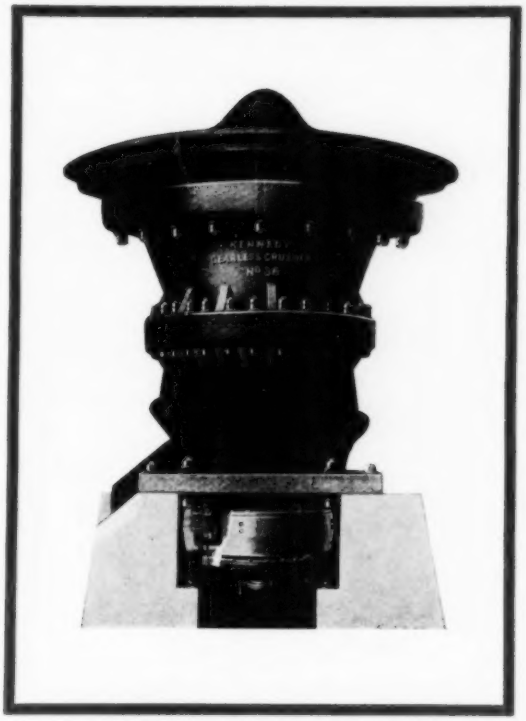
GREATER CAPACITY WITH USE OF LESS POWER IN ALL MODELS

•

TYPE "S" WITH ROLLER BEARINGS

•

DESIGNED TO CRUSH BUILT TO LAST



FRICTIONLESS, SMOOTH, QUIET ACTION

•

NO GEARS TO WASTE POWER

•

POWER APPLIED ONLY FOR CRUSHING

•

KINETIC ENERGY ADDS POWER AT NO EXTRA COST

•

COSTS LESS TO OPERATE

GEARLESS PRIMARY CRUSHERS BUILT IN CAPACITIES TO SUIT EVERY PURPOSE

A primary crusher, designed to produce maximum loads of uniform products, economically and consistently regardless of operating conditions. Extremely rugged construction assures freedom from costly shut-downs for repairs . . . cuts maintenance costs . . . uses lower power consumption . . . LASTS LONGER without maintenance than any other similar crusher.

Delivers more rock tonnage, faster and at lower cost, than any other similar crusher. Built in sizes from 12 to 1,000 tons per hour capacity. Uses no gears, belts or countershafts . . . eliminates frictional losses . . . increases efficiency . . . adds to profits.

The KVS oiling system has been pronounced perfect. Four barrels of oil per hour constantly pumped through bearings without waste. These crushers have been known to run for years without renewals to eccentric. This is why USERS say, "It Costs Less to Own the Best."

KENNEDY-VAN SAUN MFG. & ENG. CORPORATION

TWO PARK AVENUE, NEW YORK 16, N. Y.

The IMPROVED STRATIFIED
AIR SWEPT TUBE MILL SYSTEM

That → **LOWERS**
GRINDING COSTS
POWER CONSUMPTION
MAINTENANCE COSTS

This KVS Stratified Air Swept Tube Mill represents the most forward step in cement making within the past 100 years. For example: A KVS Stratified Mill, 10′ x 22′ does the work of an ordinary mill 40′ long.

By comparison, the resultant savings in the cost of installation, power consumption, balls, wear and tear, time lost for repairs and adjustments, man-hours and man-jobs, more than pays the initial cost of a KVS mill within a ten-year period.

The KVS Stratified Mill not only handles raw material but becomes a combined drier and cooler, thereby serving a TRIPLE purpose. Users derive THREE TIMES the average benefits obtained from other models.

Marked economy of operation distinguishes this system and sets it apart as an air swept tube mill without rival. In use throughout the world, it is daily proving its worth and adaptability. Let a KVS engineer explain, or send for blue prints, illustrations and full engineering data demonstrating why users say "IT COSTS LESS TO USE THE BEST" — and they do mean KVS!

KENNEDY-VAN SAUN MFG. & ENG. CORPORATION

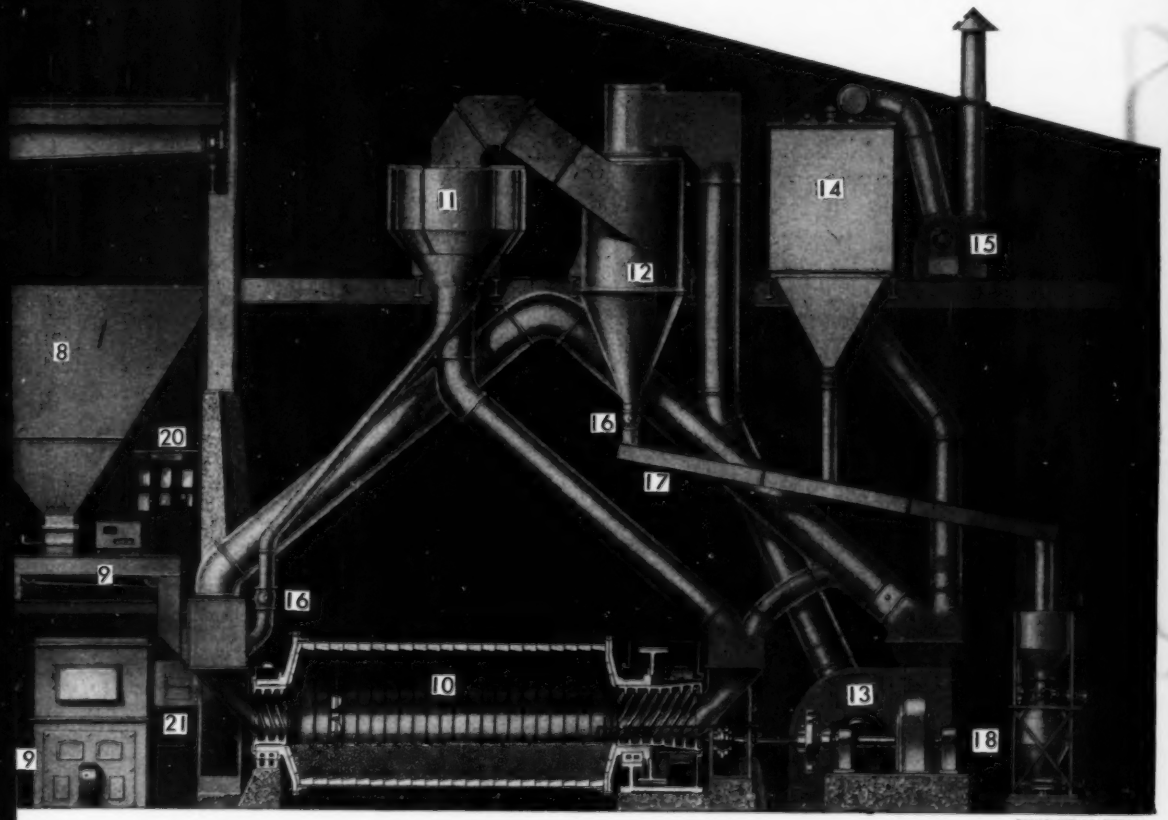
KENNEDY STRATIFIED

AIR SWEPT TUBE MILL SYSTEM

PATENTS PENDING

- **DRIES AND GRINDS SIMULTANEOUSLY**
- **AIR-COOLS CEMENT WHILE CLINKER GRINDING**

FOR RAW STONE, ORE AND CLINKER GRINDING



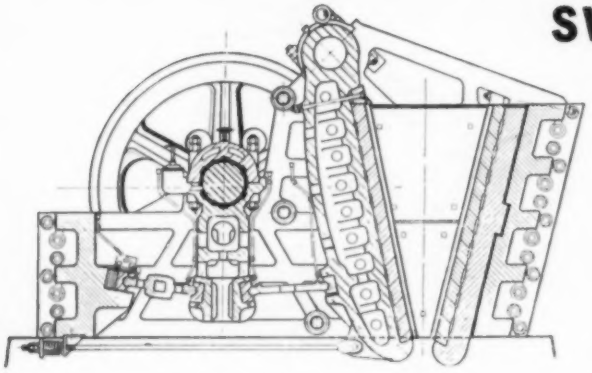
8 MILL FEED HOPPER
9 WEIGHING FEEDER
10 STRATIFIED AIR SWEPT TUBE MILL
11 RADIAL FLOW CLASSIFIER
12 CYCLONE COLLECTOR
13 MILL EXHAUSTER
14 DUST FILTER
15 DUST FILTER EXHAUSTER
16 ROTARY AIR LOCKS
17 FINISHED MATERIAL CONVEYOR
18 AUTOMATIC PNEUMATIC TRANSPORT PUMP
19 HOT AIR FURNACE
20 INSTRUMENT AND CONTROL CUBICLE
21 AUTOMATICALLY CONTROLLED TEMPERING AIR DAMPER

● ***This unit produces 94% plus through 325 mesh when clinker grinding 2" and finer***

2 PARK AVENUE • NEW YORK 16, N. Y. FACTORY: DANVILLE, PA.

IT COSTS LESS TO OWN THE BEST

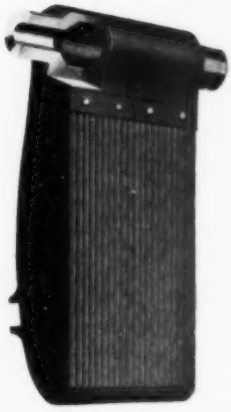
THE KENNEDY HEAVY-DUTY SWING JAW CRUSHER



BUILT TO YOUR SPECIFICATIONS IN ANY SIZE REQUIRED

Built with crusher openings from 7 inches to 66 inches . . . 6,000 to 600,000 lbs.

Frames of Herculite steel with tensile strength up to 60,000 lbs. per square inch.



Reversible Swing Jaws hold wear to an absolute minimum. Hard — Tough — Strong This Has Never Failed

POWER-PACKED, WITH THE STAMINA OF A TANK!

When you start right, you stay right and there is no better known system of economical operation than the use of equipment, designed to perform specific duties.

All KVS equipment is engineered to do the work for which it is designed at utmost efficiency. This means maximum output at minimum cost . . . long life . . . freedom from costly shut-downs for repairs and adjustments . . . ease of operation . . . low power consumption . . . uniform, high grade production.

Every claim of superiority for KVS products is based on field surveys and reports from users in every part of the world. It isn't hard to understand why these fine crushers continue to produce peak loads at minimum cost, year-after-year, when you realize that they represent top engineering skill, finest materials and manufacturing facilities without a peer.

Examine the blue prints and engineering specifications of any KVS crusher—they are available on request—and then judge for yourself the BASIC reasons why they deliver the most for the money under all operating conditions. Users say "It Costs Less To Own The Best" and they mean KVS.

KENNEDY-VAN SAUN MFG. & ENG. CORPORATION

TWO PARK AVENUE
NEW YORK 16

FACTORY
DANVILLE, PA.

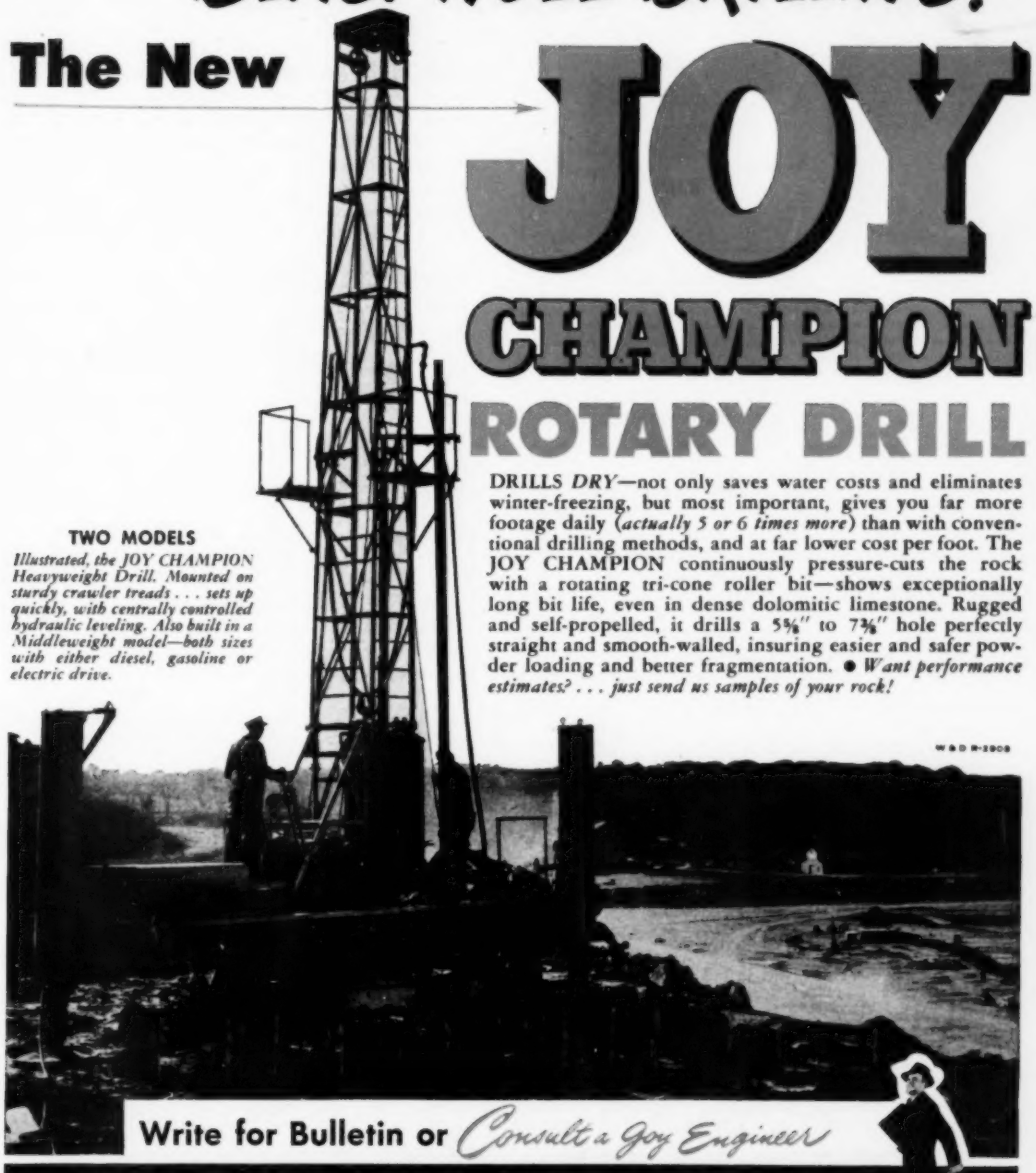
Here's FASTER, LOWER-COST BLAST HOLE DRILLING!

The New JOY CHAMPION ROTARY DRILL

DRILLS *DRY*—not only saves water costs and eliminates winter-freezing, but most important, gives you far more footage daily (*actually 5 or 6 times more*) than with conventional drilling methods, and at far lower cost per foot. The JOY CHAMPION continuously pressure-cuts the rock with a rotating tri-cone roller bit—shows exceptionally long bit life, even in dense dolomitic limestone. Rugged and self-propelled, it drills a 5⅝" to 7⅞" hole perfectly straight and smooth-walled, insuring easier and safer powder loading and better fragmentation. ● *Want performance estimates? . . . just send us samples of your rock!*

TWO MODELS

Illustrated, the JOY CHAMPION Heavyweight Drill. Mounted on sturdy crawler treads . . . sets up quickly, with centrally controlled hydraulic leveling. Also built in a Middleweight model—both sizes with either diesel, gasoline or electric drive.



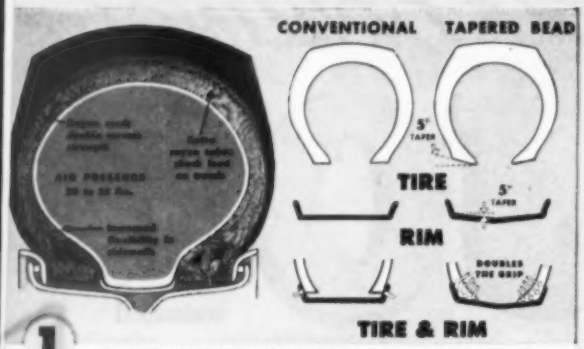
Write for Bulletin or *Consult a Joy Engineer*

JOY MANUFACTURING COMPANY

GENERAL OFFICES: HENRY W. OLIVER BUILDING · PITTSBURGH 22, PA.

IN CANADA: JOY MANUFACTURING COMPANY (CANADA) LIMITED, GALT, ONTARIO

HERE'S WHY 19 m.p.h.



1 **BIG TIRES INCREASE TRACTION**—Tournadozer's 21.00 x 25 low-pressure tires give you greater ground-gripping traction and increased flotation in sand, mud, snow or ice. Tapered bead doubles tire-to-rim grip, prevents tire slipping. Rayon cords add strength and flexibility . . . increase tire life.

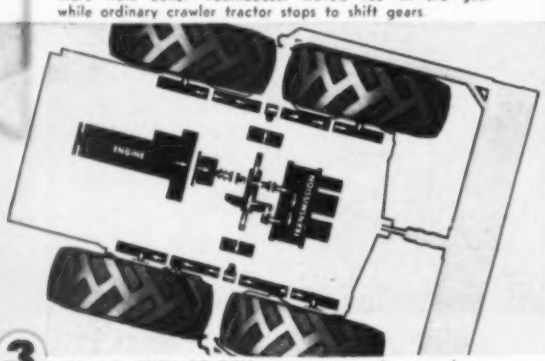
2 **INSTANT GEAR SELECTION**—Change gear ratios instantly, automatically, with finger-tip air-valve lever. Constant power retains vital momentum . . . keeps dirt rolling . . . gets more work done. Tournadozer travels 100' in 3rd gear while ordinary crawler tractor stops to shift gears.

FIRST this job-proved dozer on rubber "runs" at 19 m.p.h., instead of crawling at 5 to 8 m.p.h. It maneuvers twice as fast—and dozes twice as fast as the average crawler. It gives you reverse speeds to 8 m.p.h. . . . cuts deadhead cycle time by 2.5 to 1. And, you get far more use from its greater speeds, because you have instantaneous speed selection and can change into higher gears without shifting or losing momentum.

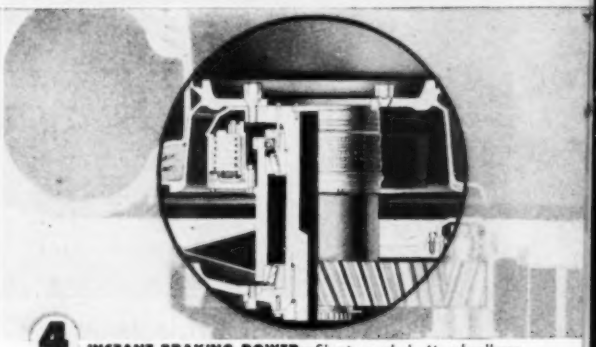
SECOND Tournadozer has the high-speed mobility to put normal waiting periods to work. When needed on scattered odd jobs, operator just hops on this big dozer . . . and drives 19 m.p.h. cross-country or over highways. No blocking, no waiting for trailer, no loading or unloading delays. Giant 21.00 x 25 low-pressure tires prevent damage to pavement and other surfaces . . . and, in poor footing, give you plenty of traction to pull through mud, sand, or snow which would stall ordinary crawler dozers.

THIRD you can keep Tournadozer working and earning during the off-season by equipping it for subcontracts or rentals with any of 10 auxiliary tools — including Scraper, Angledozer, Logging Winch, Side Crane, or Snow Plow. With each unit, Tournadozer's 180 h.p. engine, 4-wheel drive, and rubber-tired mobility will pay off in more work done.

Let your LeTourneau distributor give you all the facts. Call him . . . or write for new Tournadozer Bulletin TD-117 TODAY!



3 **180 H.P. PUSH OR PULL**—Hangs on and moves heavy loads even in toughest going. Low compression ratio diesel engine gives more power with less fuel. 4-wheel drive provides quick pickup on level or up steep grades. Rig rolls on rubber . . . has no tracks to grind in abrasive materials.



4 **INSTANT BRAKING POWER**—Short-coupled 6' wheelbase and instantaneous shift give you a compact, fast-stepping unit. Heavy-duty 4-wheel air brakes, with 1305 sq. in. of braking surface on each wheel — 5220 sq. in. on all four — give you safe, sure, complete control at all times.

LET

Send now to: **R. G. LeTOURNEAU, Inc., Peoria Illinois**

We may be in market for one or more Tournadozers. Please send information on ☐ 180 h.p. C Tournadozer or ☐ 122 h.p. D Tournadozer for use with:

NAME _____
TITLE _____
COMPANY _____
STREET _____ CITY, STATE _____
TYPE OF WORK _____

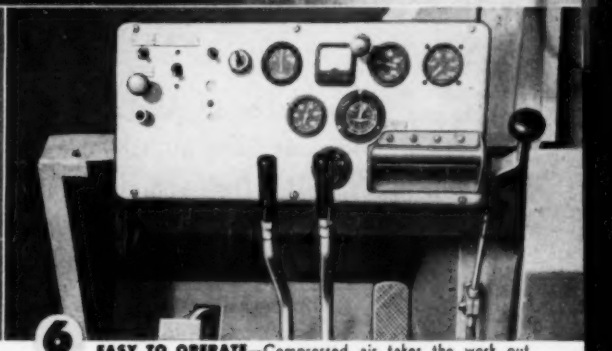
☐ Bulldozer
☐ Angledozer
☐ Carryall Scraper
☐ Logging Winch
☐ Tree Pusher
☐ Snow Plow
☐ Side Crane
☐ Rooters
☐ Rollers
☐ Root Rake

TOURNADOZER will do more work for you

HANDLES 7 MAINTENANCE JOBS IN 10 HOURS—At their Genoa open-pit iron mine near Eveleth, Minn., E. W. Coons Co. has assigned a number of widely scattered jobs to one C Tournadozer. In a typical 10-hr. shift, the hustling rubber-tired "C" maintains 2 overburden dumps, stockpiles lean ore, cleans up around 3 large stripping shovels, and handles haul road maintenance. Compared to ordinary crawler operation, Tournadozer's work-and-run ability makes every hour productive for profits.

Tournadozer Booster—Trademark Reg. U.S. Pat. Off. 2136

5 **FAST ELECTRIC-CONTROL BLADE**—Powerful, electric-control PCU plus smooth, accurate, short-coupled cable connection gives better blade control to match high dozing speed. 44" lift . . . unlimited drop . . . 5" tilt at either end. 11' 2" x 3' 7" bowl fills fast, drifts big 2½-yd. load.

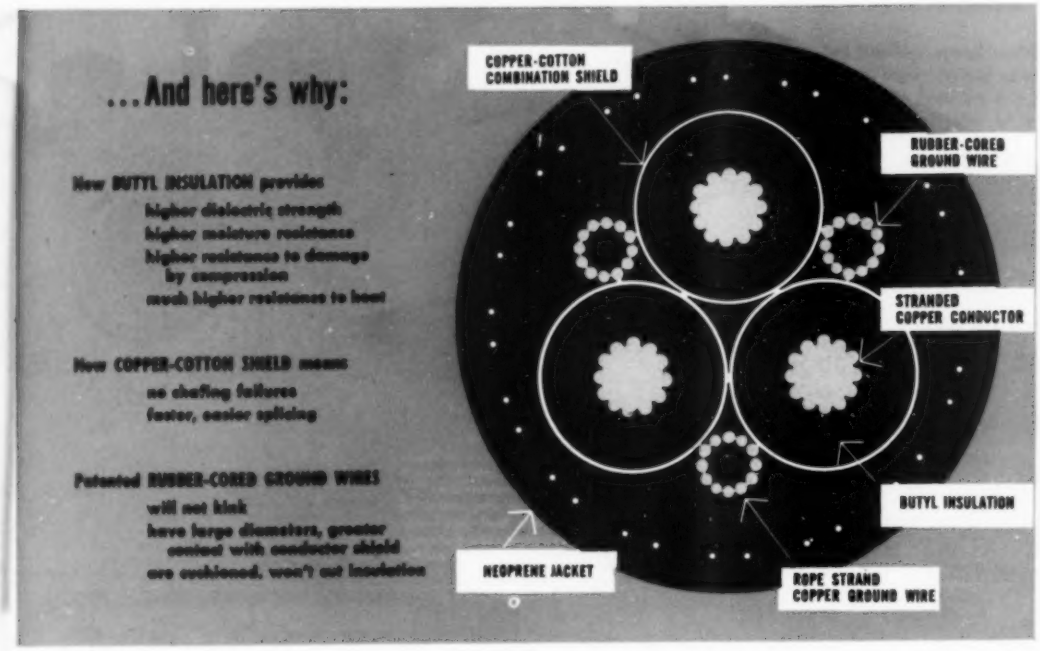


6 **EASY TO OPERATE**—Compressed air takes the work out of Tournadozing. Simple controls are air-actuated . . . easy to reach. Operator sits up front ahead of engine . . . can see where he's going, what he's doing. No stretching, no twisting, no end-of-day fatigue slow-down.

LETOURNEAU PEORIA, ILLINOIS — JOB-PROVED The World Over — **TOURNADOZERS**

IT'S RUBBER THAT PUTS THE ACTION IN TRACTION

Now BUTYL makes Securityflex High Voltage Shovel Cable better than ever



Idleness of big shovels through cable failure means big losses. Anaconda's new BUTYL-insulated SECURITYFLEX* Type SH-D High-Voltage Shovel Cable means big savings. For more information get in touch with your nearest Anaconda Sales Office or Anaconda Distributor. Anaconda Wire & Cable Company, 25 Broadway, New York 4, New York.

The right cable for the job ANACONDA®

WIRE AND CABLE

*Reg. U. S. Pat. Off.

get more E.P. per dollar!

XR50-5

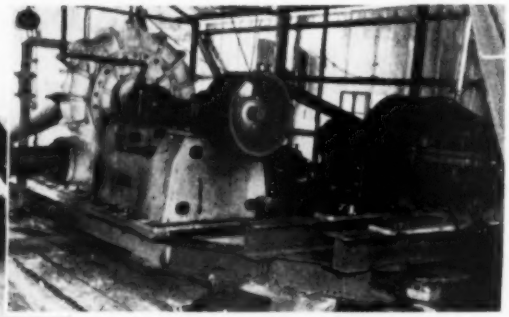
Explosive Power is what you pay for when you buy explosives. You get more E.P. for your dynamite dollar with Hercules Hercomites® and Gelamites® because these explosives not only give better breakage than older-type explosives, but are more economical to use than extra dynamites and gelatins. And there's a series for practically every mining, quarrying, and construction need.

"Hercomites," for example, come in fast, intermediate, and slow heaving-action types. One series is especially designed for poorly ventilated places. All offer improved water resistance and, like "Gelamites," come in handy Tamptite® cartridges. For full information, write for illustrated booklet, "Hercomites and Gelamites for Lower Blasting Costs."

HERCULES POWDER COMPANY
INCORPORATED
960 King Street, Wilmington, Delaware

"We PROFITED by Converting to Thomas Pumps"

Says A. G. Collins, Manager, American Sand & Gravel Company, Hattiesburg, Mississippi.



Above: Twelve-inch Thomas Durable Pump operating on 12-inch pipe line shown at left.

Left: Foreground shows 12-inch pipe line from Thomas Durable Pump to screening plant on shore. In front of screening plant, is 8-inch Thomas Pump serving loading plant of American Sand & Gravel Company, Hattiesburg, Mississippi.

MODERN DESIGN PLUS MODERN MATERIALS EQUAL LOWER PUMPING COSTS

Mr. Collins Writes:

"Our 8-inch Thomas pump, which replaced a cast iron pump 14 months ago, loads about one-third more material than we did previously in a given time, our power unit is not overloaded as it was before, and Thomas pump parts outlast those in our previous pumps by 5 or 6 times"

★ ★ ★ ★

"Our 12-inch Thomas pump replaced a manganese steel pump and gives us 3 to 4 times more wear than the unit replaced. Our downtime has decreased to almost nothing."

★ ★ ★ ★

"We are now installing a 6-inch Thomas pump to replace our last manganese steel pump. We have profited considerably by converting our entire operation to Thomas pumps."

This Thomas Durable Dredge Pump user is making a "clean sweep" of his old pump equipment. Within about one year, he has replaced three ordinary, conventional pumps with Thomas Durable Pumps.

The service life of his Thomas Durable Pumps is 3 to 6 times greater than the other pumps he has been using. He is moving more material, at reduced power consumption, reduced downtime and reduced over-all operating costs.

If you are interested, not in first cost of a pump, but in reduced cost per yard or per ton of material handled, write for illustrated circular on Thomas Durable Pump.

THOMAS FOUNDRIES INC.

BIRMINGHAM 1, ALA.

You Can Cut Today's High Production Costs with

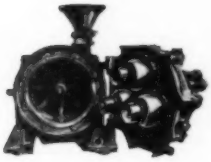
STURTEVANT EQUIPMENT

AIR SEPARATOR

For separation of fines to 325 mesh and finer. Increases output from 25% to 300% . . . lowers power costs by 50%. For years, this separator has been the standard in the cement industry.

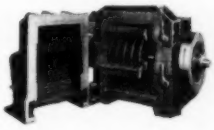
DUSTLESS BLENDER

Four-way mixing action assures a thoroughly blended product. Open-door accessibility permits easy cleaning. Available in many mixing capacities for ¼ ton per hour and up.



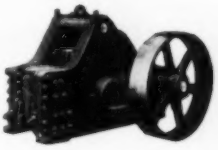
RING-ROLL MILLS

For medium and fine reduction (10 to 200 mesh), hard or soft materials. Very durable, small power. Operate in closed circuit with Screen or Air Separator. Open-door accessibility. Many sizes. No scrapers, plows, pushers, or shields.



SWING-SLEDGE MILLS

For coarse and medium reduction (1" to 20 mesh). Open-door accessibility. Soft, moderately hard, tough or fibrous substances. Built in several types and many sizes.



JAW CRUSHERS

For coarse, intermediate and fine reduction of hard or soft substances. Heavy or light duty. Cam and Roller action. Special crushers for Ferro-alloys. Several types, many sizes.

Sturtevant equipment, such as illustrated, helps you overcome high labor and production costs by increasing output. In addition, their rugged construction assures long life with minimum maintenance. It will pay you to investigate these machines. Write for information.

STURTEVANT MILL COMPANY
104 CLAYTON STREET, BOSTON 22, MASSACHUSETTS

Designers and Manufacturers of: CRUSHERS • GRINDERS • SEPARATORS
CONVEYORS • MECHANICAL DENS and EXCAVATORS • ELEVATORS • MIXERS

MAIL COUPON TODAY!

STURTEVANT MILL COMPANY
104 Clayton Street, Boston 22, Mass.

Gentlemen:
Please send me your catalog. I am especially interested in _____

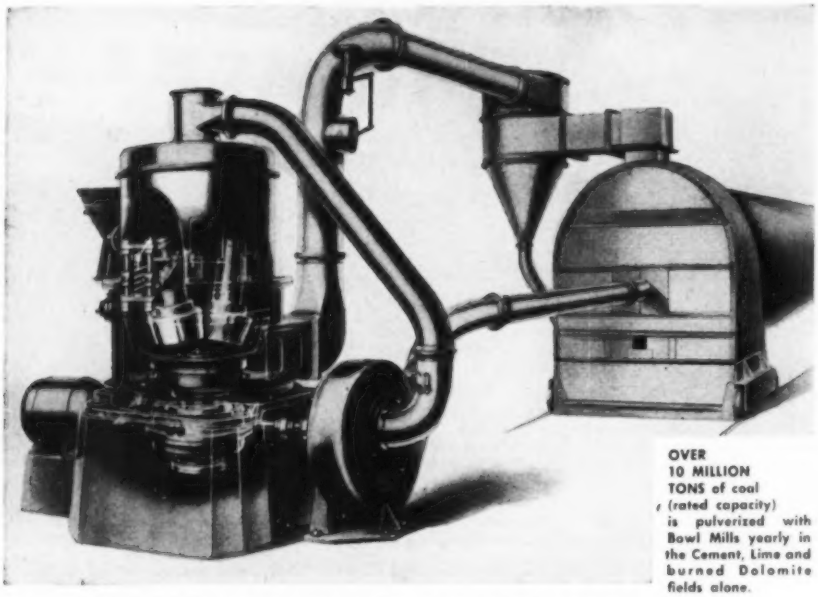
Name _____

Street _____

City & State _____

For 1951 Specify

RAYMOND BOWL MILLS



OVER
10 MILLION
TONS of coal
(rated capacity)
is pulverized with Bowl Mills yearly in the Cement, Lime and burned Dolomite fields alone.

RAYMOND BOWL MILL FIRING

The first step in your "planned economy" for the critical year ahead should be the use of the Raymond BOWL MILL as an important factor in reducing your kiln operating costs.

In more than 250 kiln installations, it has proved its ability to show substantial savings in the production of cement clinker, lime and dead-burned dolomite, while maintaining top level quality.

Its responsiveness to load changes, ease of control, efficiency in handling coals of any grade or moisture content, and exceptionally high availability, are advantages you can profit by when you install the Bowl Mill.

Write us for further details of this fully coordinated, automatically controlled Direct Firing System.

Ask for Catalog No. 62 for complete description and application of Raymond BOWL MILLS.

COMBUSTION

Sales Offices in Principal Cities

for Maximum...

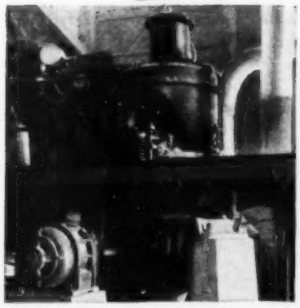
FIRING CONTROL KILN ECONOMY

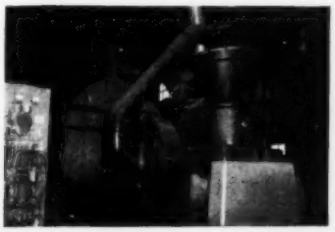
BOWL MILL CONTROL PANEL

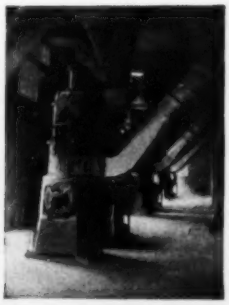
This control system enables the operator to supervise several mills as easily as a single unit. The panel board gives a complete operating picture of the Bowl Mills at all times. Close regulation of the mill and its quick response to changes insure uniformity in both grinding and firing . . . the key to economy in kiln operation.

TYPICAL INSTALLATIONS

Bowl Mills in rotary kiln plants show high operating efficiency resulting in repeat orders and replacement of other types of firing installations for extra economies.





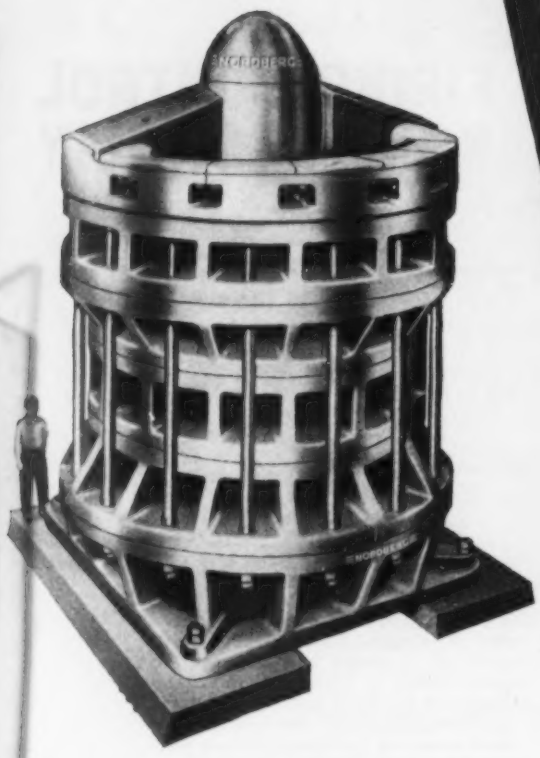


ENGINEERING-SUPERHEATER, INC.
RAYMOND PULVERIZER DIVISION
1321 North Branch Street, Chicago 22, Illinois

BOWL MILL

Proven

NORDBERG *for* CEMENT

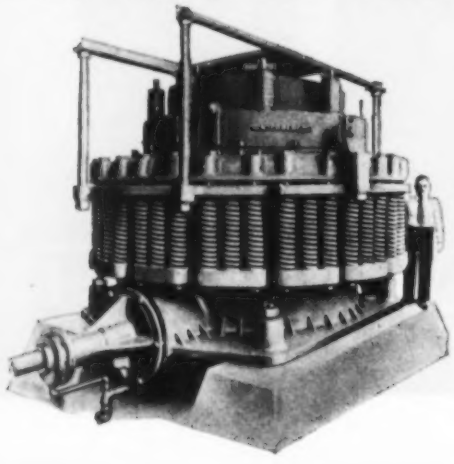


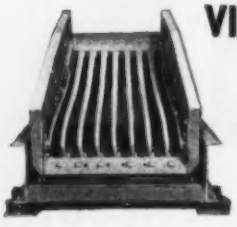
HERE is dependable NORDBERG MACHINERY designed and built especially for the CEMENT INDUSTRY—to assure maximum and continuous production at low operating and maintenance costs. FROM PRIMARY AND REDUCTION CRUSHING AND SCREENING OF RAW MATERIALS, THROUGH THE SUCCESSIVE STAGES OF RAW GRINDING, CALCINING, AND FINISH GRINDING, NORDBERG PROCESSING MACHINERY HAS BEEN PROVEN IN SERVICE BY CEMENT PRODUCERS THROUGHOUT THE WORLD.

NORDBERG CEMENT MACHINERY includes Gyratory Crushers for primary breaking; Symons Standard and Short Head Crushers for preparation of finely and uniformly sized mill feed; Vibrating Grizzlies and Screens for scalping and sizing; wet and dry grinding Ball, Tube, and Compartment mills; Rotary Dryers, Kilns and Coolers.

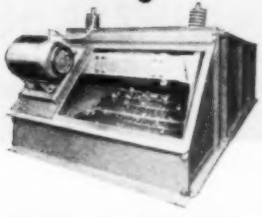
For dependable low-cost power, a complete line of NORDBERG DIESEL ENGINES is available in sizes ranging from 10 h.p. to 9600 h.p.—a range of sizes to provide the solution to practically any power problem the Cement Industry may have.

GYRATORY and CONE CRUSHERS for Primary, Secondary and Fine Reduction Crushing





VIBRATING GRIZZLIES and SCREENS for Scalping and Sizing

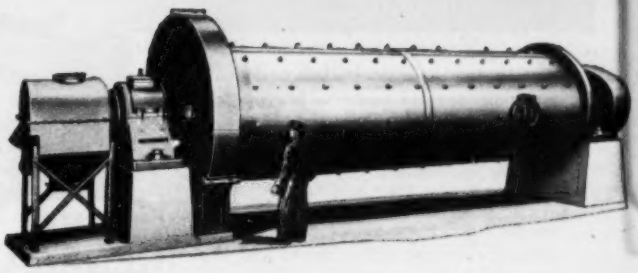


MACHINERY *the* INDUSTRY

Dependable

DRYERS, KILNS and COOLERS for Pyro Processing Operations, Drying, Calcining, Burning and Cooling

GRINDING MILLS for Wet or Dry Raw Grinding and for Preliminary and Finish Grinding



DIESEL ENGINES

2 and 4-cycle, 10 to 9600 h.p. Burn Gas, Oil or any Combination of Both

Q-151-2

WRITE FOR LITERATURE ON ANY OF THIS MACHINERY

NORDBERG MFG. CO.

MILWAUKEE 7, WISCONSIN

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MEXICO, D. F. · LONDON · TORONTO · JOHANNESBURG

NORDBERG MACHINERY

GENERAL

COMBINES SAFETY AND STRENGTH, EXTRA TRACTION AND SPEED . . . WITH LONGER WEAR TO DO ANY JOB, ANYWHERE

FASTER! EASIER! AT MORE PROFIT!

The General L. C. M. is built to do most work off-the-road, some on. Massive lugs of rubber dig deep for non-skid traction. Tremendous shoulders resist cuts, scrapes and bruises.

The General H. C. T. does most work on-the-road, some off. Thick, deep, free-rolling ribs give safety, speed and protection against punctures on the long over-the-road hauls.

THE GENERAL *L.C.M.*

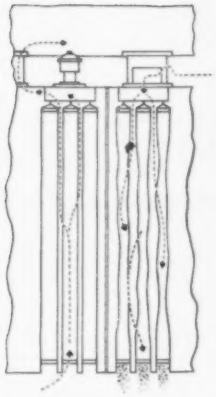
THE GENERAL *H.C.T.*

In soft, slushy ground the General L. C. M. bites in for extra traction, forward or backward. Broad lugs keep tires on top of soft surfaces.

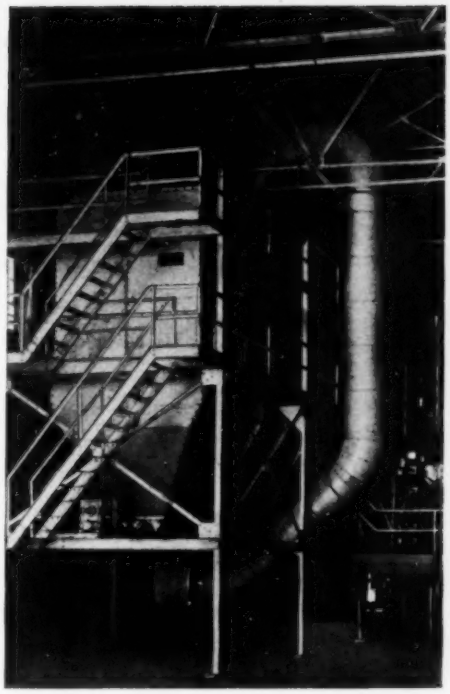
General H. C. T. rolls safely over the highway to off-the-road delivery points; gives extra traction when you need it most.

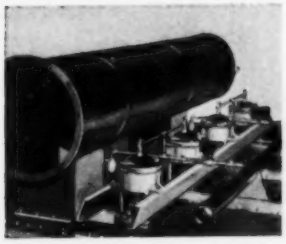
Heavy loads require extra strength and stopping-power. The General H. C. T.'s extra deep tread works faster, lasts longer, runs and stops safer.

SPECIFY GENERAL TIRES ON YOUR NEW EQUIPMENT



Shown above dust laden air moving upward, distending bags. Right half of cut shows reversed air current as bags are shaken and cleaned. At right the exterior of entire unit.





Close-up of automatic shaker units and an air reversal valve. Norblo bag shaking involves only one compartment at a time for only 10 seconds. Timing cycle is variable for dust loading, without shutting down.

Dust Control For Full Production

In a number of presently very important industrial jobs Norblo automatic bag type dust and fume collectors are making new records for high efficiency. The basic principles of bag cleaning, one compartment at a time, with combined shaking and air reversal, are shown above. Norblo automatic cleaning is variable for dust load; timing can be changed without shutting down the unit, and any compartment can be cut out for inspection or bag repair.

All of these features permit continuous heavy duty operation with maximum capacity of the cloth area.

Most of the modern smelter bag houses in North America, and most of the important cement and rock products plant installations in this country, are using Norblo dust collecting equipment.

Norblo also builds centrifugal and hydraulic dust collectors, exhaust fans and cement air cooling systems. Write for literature on any of these

Norblo

Engineered Dust Collection Systems for All Industries

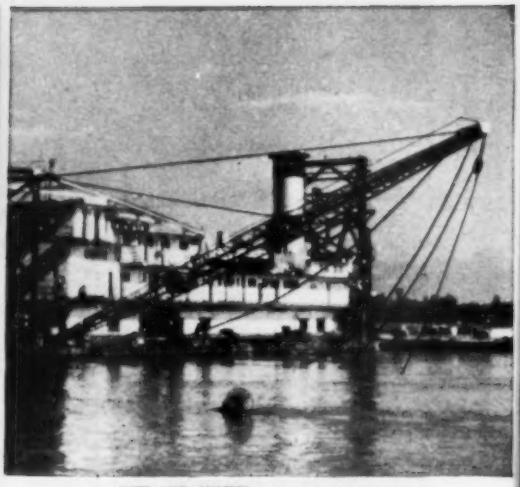
THE NORTHERN BLOWER COMPANY

6407 BARBERTON AVE. • CLEVELAND 2, OHIO

FOR JOBS LIKE THESE...

You've got to have a rope with guts

HIGH, WIDE AND HANDSOME. Quarries need wire rope that will run fast, support tremendous weight. This photograph shows TIGER BRAND Wire Rope used for derrick and mast guys, and hoisting ropes, in a nationally-known quarry.



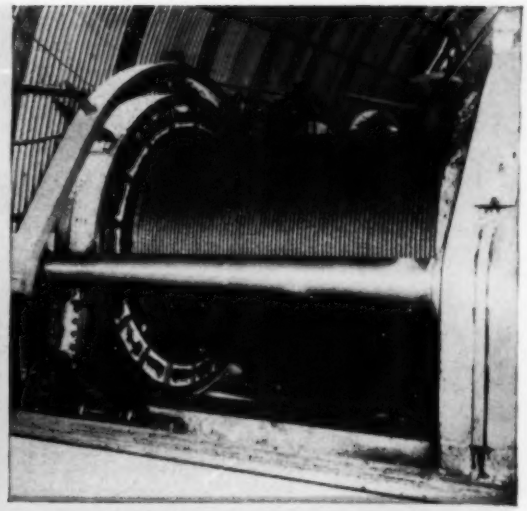
WET AND MUCKY. TIGER BRAND Wire Rope furnishes the muscles for this big Mississippi dredge. Constantly in and out of water . . . subjected to extreme loads . . . TIGER BRAND delivers economical heavy-duty service that pays off in fewer rope replacements.

A ROPE'S TOUGHEST DIGGING JOB. Dust and grit spell short life for inferior rope—if it's used in strip mining. But you can count on TIGER BRAND Wire Rope to give matchless performance under the toughest operating conditions.

TIGER WIRE ROPE SLINGS

We can furnish a complete line of 8, 6, 4-part and laid slings as well as all standard and special wire rope fittings. Choose from our standard selection or, if you have a special problem, we'll make special slings to your specifications. Write for our free booklet, "American Tiger Wire Rope Slings."

OUT GOES THE OVERBURDEN. Stripping overburden usually means high shock stresses on the rope. TIGER BRAND Wire Rope—made in the widest variety of styles—is available to meet unusual conditions of shock . . . abrasion . . . high loads.



READY FOR A WORKOUT. TIGER BRAND Wire Rope has the flexibility to withstand constant coiling and uncoiling. When properly lubricated and maintained, TIGER BRAND Wire Rope will give you dollar for dollar service that can't be beat by any other wire rope.

FOR HIGH STRENGTH, GREAT FLEXIBILITY AND A COMPLETE RANGE OF SIZES AND STYLES—USE

TIGER BRAND WIRE ROPE

Judge it by the jobs it handles!

Most premature rope failures can be traced to improper selection, maintenance or installation.

Your TIGER BRAND field service engineer can help you with all these problems. A skilled engineer, he has access to a tremendous file of case histories. He knows how to pick the *best* kind of wire rope for your own job—the type of core, the kind of steel, the construction, the lay and the finish—all things that must be considered for top performance.

Your TIGER BRAND field service engineer will do more than help you select the rope. He'll show you how to use it most effectively with your running equipment. He might, for example, suggest that you use:

MANGANESE STEEL SHEAVES TO INCREASE ROPE LIFE

Soft steel sheaves can cause trouble. Tiny slivers of metal become imbedded in the rope and "grind" it until it fails. Furthermore, the rope will cause corrugations in the sheave. In turn, these corrugations can ruin the rope that caused them. Manganese steel sheaves actually harden and polish themselves under severe pressure and friction. So they continuously present a smooth surface to the rope—and lengthen its life.

If you have a special application that's tough on wire rope, get in touch with your TIGER BRAND field service engineer. Meanwhile, you'll find a wealth of knowledge in our information-packed handbook, "American TIGER BRAND Wire Rope." Write for it today.

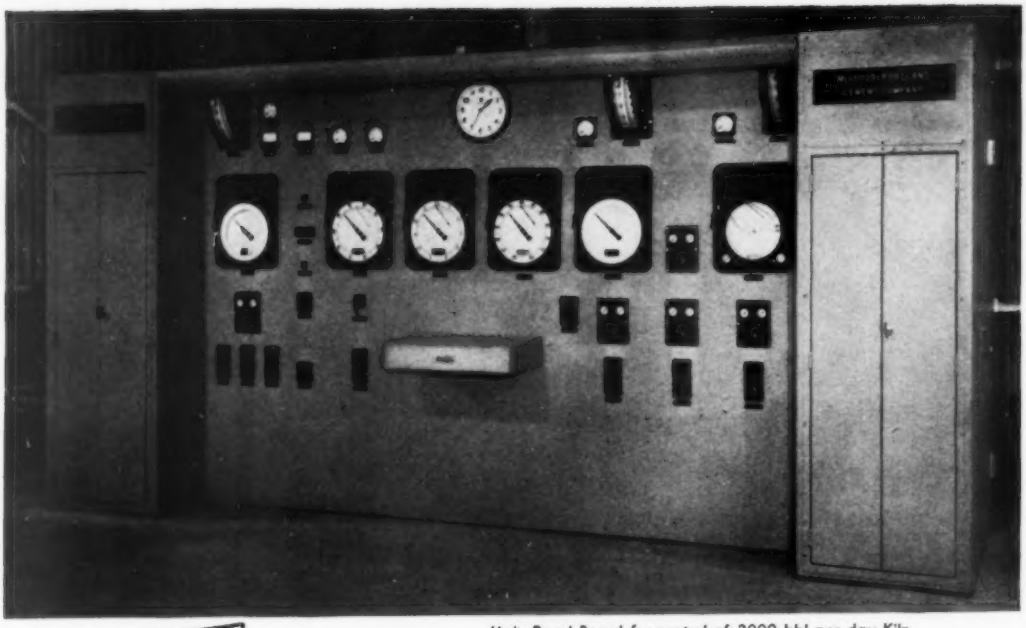
AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA STEEL COMPANY, SAN FRANCISCO
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM
SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT CO., NEW YORK

USS TRADE MARK

AMERICAN TIGER BRAND WIRE ROPE

Excellay Preformed

UNITED STATES STEEL



Main Panel Board for control of 3000 bbl per day Kiln at Missouri Portland Cement Company, St. Louis, Missouri.

3 Ways Better

...Bailey Control for Rotary Kilns

Bailey Control for Rotary Kilns gives you better performance three ways:

1. Economical Operation
2. Uniform Quality of Product
3. Reduced Maintenance

These are advantages which can be achieved when all phases of kiln operation are coordinated to work together as a team. Here's how Bailey Kiln Control can help you get all three.

ECONOMICAL OPERATION

With Bailey Combustion Control you can be certain that you are getting maximum product for every unit of fuel you burn. Bailey Control closely guards the Fuel-Air Ratio, Hood Draft, Fuel Feed, Clinker Cooling and the Temperature of Air for Combustion.

UNIFORM QUALITY OF PRODUCT

Bailey Instruments and Controls can help you achieve a uniform high grade product. Measurements of temperatures, kiln speed, combustibles content, and oxygen content can be transmitted to recorders on centrally located control boards like the one shown. There is no sacrifice of accuracy or speed of response. High temperature alarm contacts may also be provided with Bailey Pyrometers as a further aid in achieving optimum uniformity of product.

REDUCED MAINTENANCE

By maintaining uniform temperatures and excess air conditions in the kiln, Bailey Controls help to reduce to a minimum costly refractory repairs and wear and tear on auxiliary equipment.

Bailey Meter Company has a staff of engineers who are experts in the control of rotary kilns. Assure yourself of optimum kiln performance. Let one of these men help plan your Kiln Control System. P-22

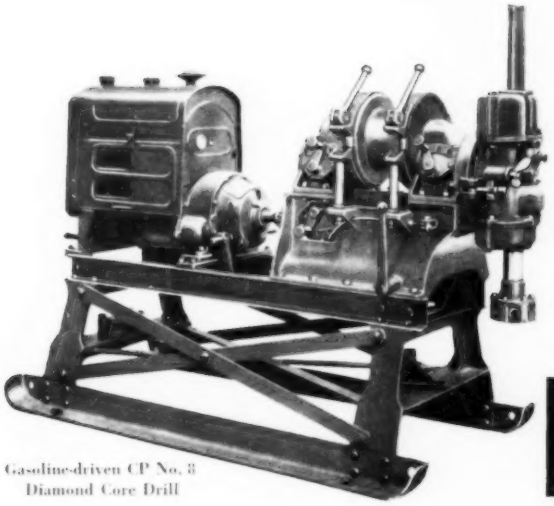
BAILEY METER COMPANY

1051 IVANHOE ROAD • • • CLEVELAND 10, OHIO

Controls for Processing

TEMPERATURE · PRESSURE · % OXYGEN · % COMBUSTION · FLOW · LEVEL · DENSITY · RATIO

FOR EXPLORATORY DRILLING



Gasoline-driven CP No. 8
Diamond Core Drill

For exploring quarry sites or possible extensions of present sites, the gasoline-driven CP No. 8 DIAMOND CORE DRILL is ideal. Ruggedly built, skid mounted, readily moved from hole to hole under its own power.

Drilling at the continuous high speed made possible by bortz bits, the CP No. 8 gives exceptional performance with remarkably low maintenance. With E-EX Fittings it has a capacity of 900 feet.

For still deeper drilling, the CP No. 15 provides a capacity of 1750 feet. Both the No. 8 and No. 15 are also available with Diesel-drive.

Write for Bulletin No. 313

CHICAGO PNEUMATIC TOOL COMPANY
General Offices: 8 East 44th Street, New York 17, N. Y.

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES
ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

An ever brighter picture
The Accurate Low-Cost Concentration
of
ANDALUSITE · BARITE · CEMENT ROCK · COAL · CHROMITE · DIAMONDIFEROUS GROUND · FELDSPAR
FLUORSPAR · GARNET · GLASS SANDS · GRAPHITE · GRAVEL · GYPSUM · ILMENITE · IRON OXIDES · KYANITE
MAGNESITE · MANGANESE · MICA · OLIVINE · PEARLITE · PHOSPHATE ROCK · POTASH · RHODOCHROSITE
SALT · SILLIMANITE · SCHEELITE · SPODUMENE · VERMICULITE · WOLFRAMITE · AND SIMILAR MINERALS
By Processes and Reagents
Offered by Cyanamid

If you mine or contemplate mining any of the above non-metallic or metallic oxide minerals, these simple facts are important to you:

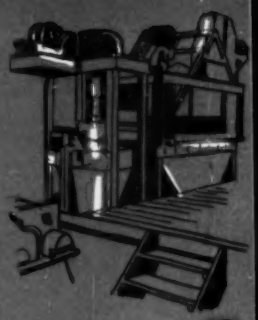
1. Every last ton of these vital industrial minerals will undoubtedly be needed in the difficult days ahead.
2. Grade as well as tonnage will be important for defense-order needs.
3. Quickly, at low capital-cost, many properties can increase output; cut costs by less-selective mining; work deposits now considered to be sub-marginal; and ship higher-grade end-products by adding Processes and Reagents offered by Cyanamid.
4. A very considerable background of test results, design data and operating experience now exists on a long list of non-metallics to assure predictable performance in minimum time at lowest cost.
5. It is not one day too early to find out what Cyanamid can do to help you operate more efficiently into the future.

AMERICAN Cyanamid COMPANY

WHAT CYANAMID OFFERS YOU

Cyanamid offers the two most efficient Separation Processes by Gravity Difference (Heavy-Media Separation and the Dutch State Mines Cyclone Separator) as well as a group of effective Specialized Reagents and Processes for Non-Metallic Froth Flotation. Alone or in combination, these Processes and Reagents are beneficiating thousands of tons per day in plants as small as 8 tons per hour and as large as 20,000 tons per day.

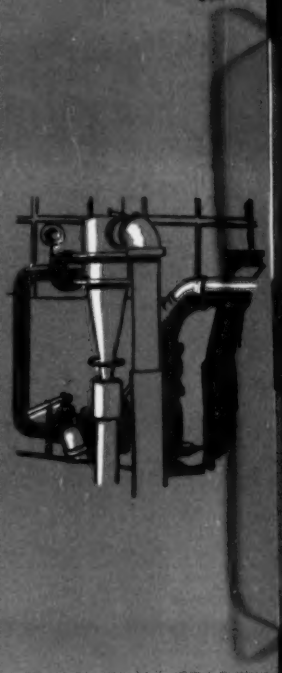
Cyanamid also offers, after preliminary discussion of your problem without cost or obligation, to run tests on your material in the Cyanamid Mineral Dressing Laboratory; to develop economic beneficiation flow schemes; to suggest proper reagent combinations; to cooperate with engineers of your choice in the design and construction of plants and to assist in tuning up the installation for most effective results.



WHAT HEAVY-MEDIA SEPARATION DOES

Heavy-Media Separation accurately separates valuable mineral from unwanted deleterious material in sizes down to 30 mesh by virtue of their differences in specific gravity. You set the gravity of the Heavy-Media "pool" at any gravity from 1.25 to 3.40 to get the separation you want. From then on, the Heavy-Media unit maintains that gravity within ± 0.01; automatically recovers and reconditions the medium, and feeds it back to the separating pool. On many minerals, you can mine non-selectively by the most economical method with assurance that the Heavy-Media unit will produce a uniform end-product, regardless of how feed fluctuates in quantity or content of unwanted material.

As Technical and Sales Representatives for Heavy-Media Separation Processes, we do not design, build or lease plants but can put you in touch with experienced engineering construction firms who do including those who can make speedy delivery of pre-fabricated "packaged plants" in capacities up to 300 tons per hour.



THE DUTCH STATE MINES CYCLONE SEPARATOR

This unique separation process is particularly applicable to the low cost separation of ¼" x 65 mesh and finer sizes. Employing a unique application of centrifugal and centripetal forces, the Dutch State Mines Cyclone Separator merits study (a) as a low-cost method of pre-concentrating where the feed contains only a small percentage of high-value minerals, (b) to produce a directly-marketable mineral concentrate from fine material, (c) to treat feeds which are inherently not amenable to jig or table treatment, or cannot be economically concentrated by froth flotation.

CYANAMID FROTH FLOTATION REAGENTS AND PROCESSES

Froth flotation is by far the most widely-used process for the beneficiation of fine material and as the final step in the treatment of feed that has been pre-concentrated by mechanical methods. In many instances, it has no peer and its use is constantly being expanded by the development of improved processes and reagents.

With the world's longest and broadest experience in the development and application of flotation reagents, Cyanamid offers the 800 Series, 700 Series, Oleic and other Fatty Acid Promoters, and Higher Alcohol Frothers, as well as Processes for their effective use. We welcome correspondence on these reagents and will gladly give you the benefit of our extensive experience in non-metallic flotation.

TAKE THIS FIRST STEP NOW

First step to more efficient, profitable operation is to send for the booklets listed below. The coupon is for your convenience.

Mineral Dressing Division
American Cyanamid Company
30 Rockefeller Plaza, New York 20, N. Y.

- ☐ MINERAL DRESSING NOTES #14, a 48-page technical booklet explaining *Heavy-Media Separation Processes*, showing flow schemes, plants and commercial operating results.
- ☐ MINERAL DRESSING NOTES #16D, describing in detail the *Dutch State Mines Cyclone Separator*.
- ☐ MINERAL DRESSING NOTES #15, describing *Cyanamid Flotation Reagents* and their fields of use.

YOUR NAME _____

COMPANY _____

ADDRESS _____

_____

MINERAL DRESSING DIVISION

30 ROCKEFELLER PLAZA NEW YORK 20, NEW YORK

PHILLIE GEAR

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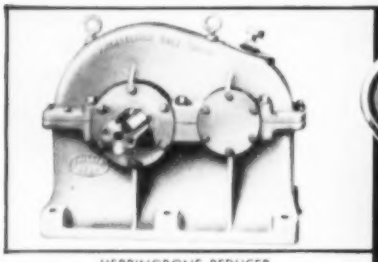
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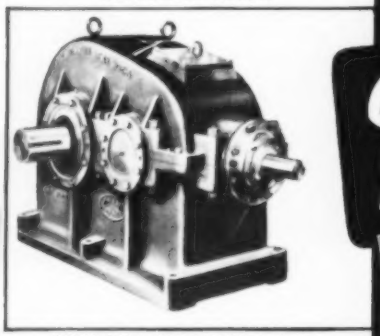
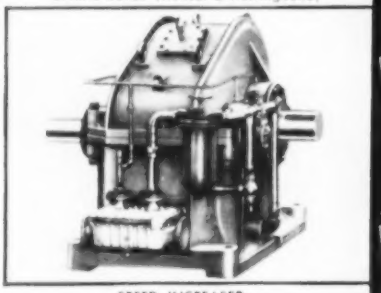
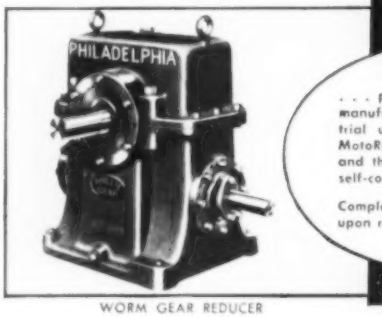

SPIRAL BEVEL (Helical & Herringbone)


SPEED INCREASER



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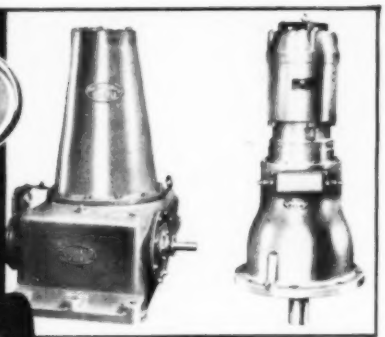
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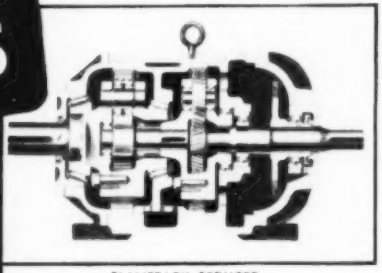
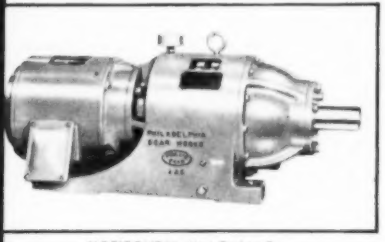
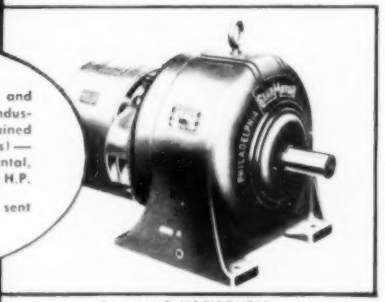

PLANETARY REDUCER


HORIZONTAL MotoReduceR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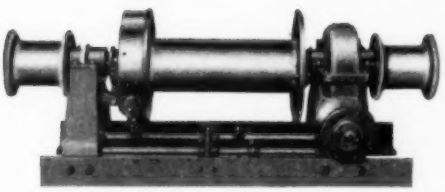

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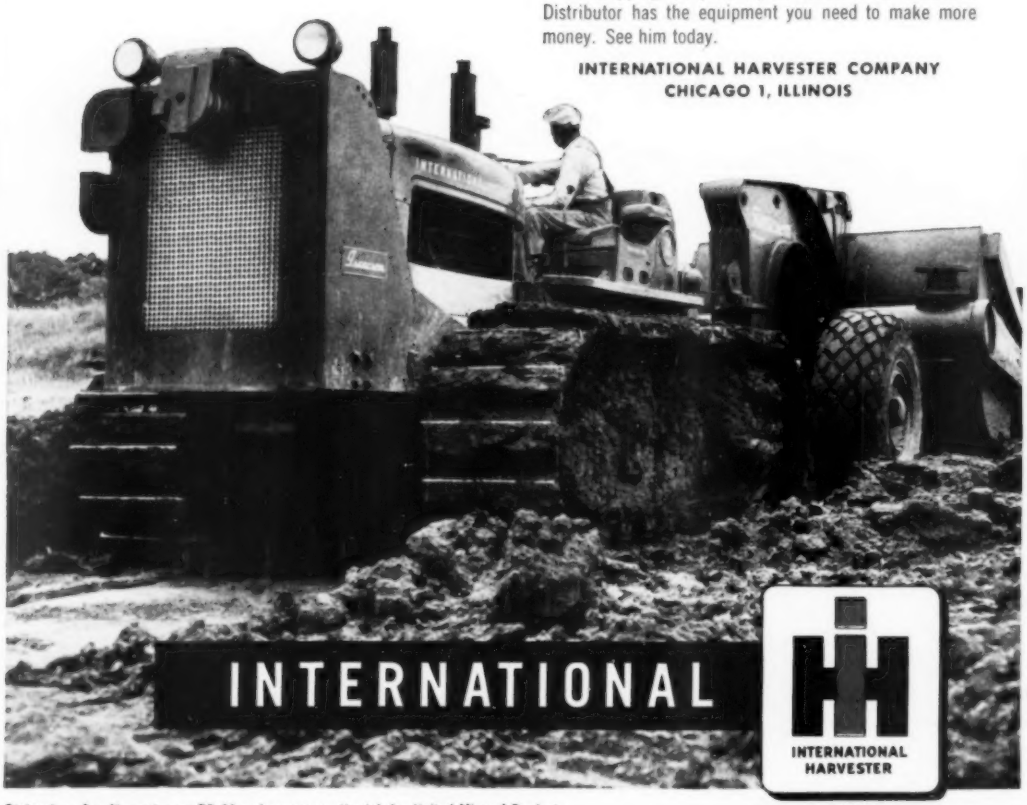

Stripping for limestone: TD-24 and scraper on the job for United Mineral Products.

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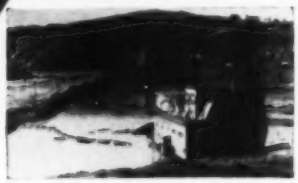
New and old type McLanahan Log Washers used here remove clay from cement rock in Pennsylvania.



McLanahan Log Washers removing tough clays from gold ores in Alaska.

McLanahan Paddle Mill and Log Washer cleaning Texas limestone.

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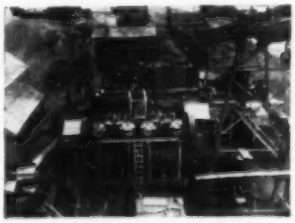
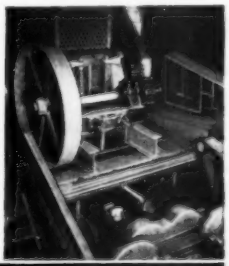


Two pairs of 33' McLanahan Logs, used for cleaning sand and gravel in Virginia.



McLanahan Rockmaster Crusher and Log Washer removing tough clays from iron ore in Alabama.

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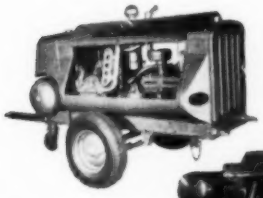
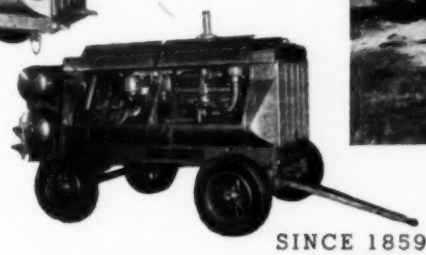


Model WH-105



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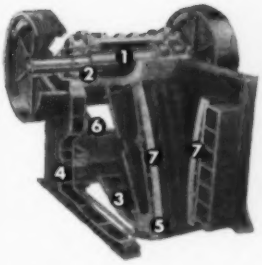

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Vol. 43 JANUARY 1951 No. 7

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PIT AND QUARRY

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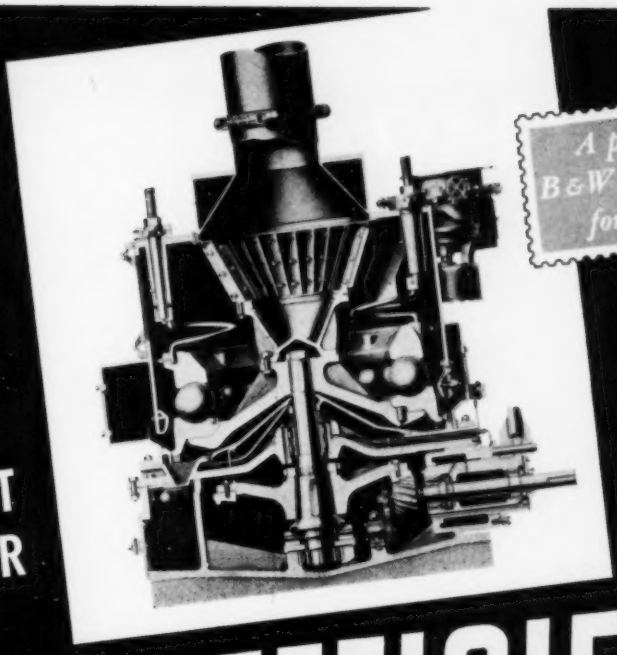

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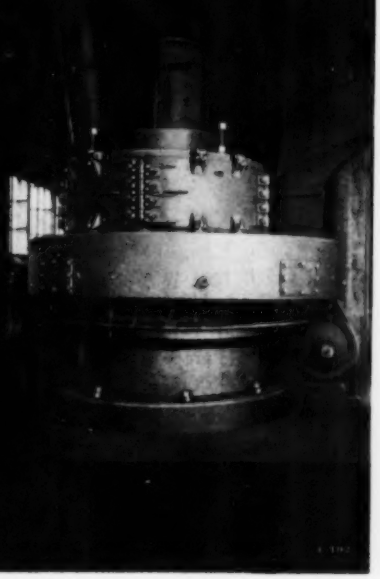

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editorial

An Answer to Critics of the Cement Industry

THERE has been much criticism of the cement industry in the last two years, and particularly during the late summer and fall of 1950, for its inability to entirely meet unprecedented boom demands. It has been accused of not expanding its capacity sufficiently and preferring to pay out its profits in dividends, of unfairly apportioning the cement produced, and of unjustifiably raising its prices. A few isolated individual companies may be guilty of one or more of these things, but the industry as a whole definitely is not guilty of any of them; on the contrary, it is entitled to the highest praise for its all-out efforts to increase production enough to meet demands, for its efforts to distribute its product equitably among all users, and for its unparalleled effort to hold down prices.

Taking the complaints in the order mentioned, the cement industry, after just completing a huge post-war expansion and improvement program in 1948, in 1949 increased its capacity by about 4,700,000 bbls. annually, and in 1950 by about 13,000,000 bbls. annually, or about 2 and 5½ percent, respectively. Three new plants were built in the United States in 1950, and dozens of important improvement programs were completed which involved, among other items, the installation of at least 17 new kilns. Our information on expansions in 1950 is not complete, and that on work under way and definitely planned for completion in 1951 is even less complete. At present, however, expansion programs in this category affect several dozen plants and call for a total capacity increase in 1951 of at least 14,000,000 bbls. annually, or nearly 6 percent. The installation of 18 new kilns is included. There are four new plants under construction for 1951 completion, with a combined capacity of 4,500,000 bbls. daily. Several other new plants are planned for possible later completion.

THE magnitude of the portland cement industry's expansion in recent years and the comparatively small increases in mill prices to the consumer make it evident that profits did not approach those of many other industries. Perusal of financial statements over the last several years verifies this fact, most cement companies having shown modest profits up to the last half of 1950, when they were somewhat higher. It must be remembered that over the last 20 years the average earnings in the industry earnings in recent years.

That the cement industry really tried to distribute its product equitably and succeeded in doing so is more difficult to prove. The best evidence probably lies in the answers to a questionnaire mailed out to the ready-mixed concrete and concrete building units industries. These showed that ready-mix and concrete units producers lost not more than 3 to 5 percent of their potential output due to cement shortages, in spite of increases of 15 and 20 percent, respectively, in their output.

ONE thing that most critics of the cement industry do not realize is the difficulty of increasing capacity or output, both individually and collectively. A new plant usually takes about two years from the time plans are started until the plant is in full operation, actual construction taking about a year under present conditions. Extensive plant improvements take nearly as long. In most industries output can be readily increased by adding shifts. By the very nature of a cement plant, it must regularly operate around the clock; so nothing can be gained the easy way. There is also a limit to the amount of time cement equipment, especially kilns, can be operated without shutting down for repairs. The portland cement industry operated at 81 percent of its capacity in 1948 and 1949, and 84 percent in 1950. The latter is probably an alltime record which would have been even higher had it not been for serious coal and car shortages and strikes.

The cement industry has increased the price of its cement much less than the increase in the cost of labor and materials it uses. The price of portland cement has increased only 49.2 percent from 1939 through September, 1950, as compared with a 142.7 percent increase for all building materials and 296.8 percent for lumber. Leaders of the industry may live to regret their forbearance in this respect, but the comparatively low cost of cement, and consequently of concrete, is undoubtedly one of the main reasons why concrete is being used in an increasing percentage of construction.

Strength Means Security

THE United States must strengthen economic security at home if it is to succeed in rearming itself and its allies against the Russian war threat. That is the aim of a program recently proposed by Lewis H. Brown, chairman of the board of directors of the Johns-Manville Corporation. He proposes:

1. Vigorous curtailment of non-essential governmental spending and subsidies.
2. Elimination of all non-essential government employees, transferring those qualified to war activity, rather than simply hiring more employees for war activity work.
3. Levying of enough war taxes on corporations, individuals, manufacturers, and sales, to pay for war costs as we go along.
4. Use of Federal Reserve powers to fight inflation.
5. Avoiding deficit financing as if it were a plague.
6. Use of selective controls such as allocations when, as, and if necessary, but avoiding as far as possible the adoption of direct controls.
7. Retaining, as far as possible, a free market.
8. Maintaining the value of the dollar by preventing inflation.
9. Preserving, in terms of purchasing power, the insurance policies, savings and bonds of citizens.
10. If necessary, encouraging the sale of war bonds by instilling public confidence that their purchasing power will not be lessened by inflation.

Walter E. Trauffer

SMIDTH

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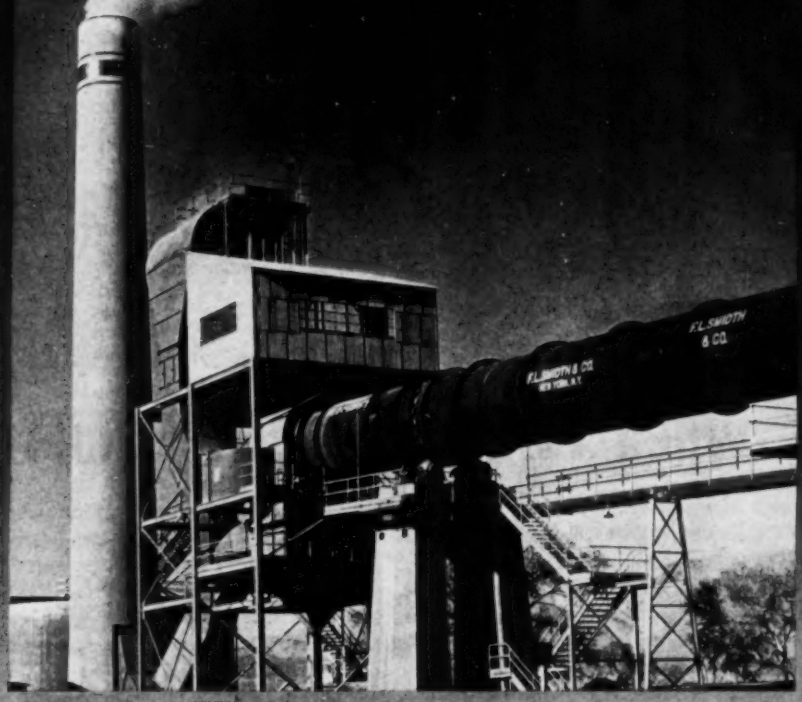

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news of the industry

PIT AND QUARRY

Boettcher of Ideal Cement Reveals Firm's Plans For $4,000,000 Plant

According to an announcement released by President C. K. Boettcher of the Ideal Cement Company, the firm will spend $4,000,000 on a new plant in Baton Rouge, La. These facilities are to be built on a site purchased by Ideal from the government last July.

Mr. Boettcher stated that partial operation would begin next May, with full operation scheduled for a year later. The capacity of the Baton Rouge plant is expected to be 1,500,000 bbls. annually.

Negotiations for the plant were carried on by Cris Dobbins, Ideal's executive vice-president and general manager, and M. O. Matthews, vice-president and general manager of the firm's southern division. Construction and operation will be directed by Thomas B. Douglas, general superintendent, under the direction of Mr. Matthews; and sales will be supervised by R. W. Winters, general sales manager.

Ideal now has nine producing locations scattered throughout the West, the South, and the Southwest. A distribution terminal is presently under construction at New Orleans.

$10,000,000 Expansion Plan Announced by Natl. Gypsum

National Gypsum Company has announced plans to spend another $10,000,000 for plant expansion and improvements. This will raise to about $50,000,000 the amount spent by the company in the last five years to enlarge and modernize its facilities in various parts of the country.

The new program is aimed at meeting the demand for the company's gypsum wallboard, lath, and plaster in the area between the Mississippi River and the Rocky Mountains, President Melvin H. Baker said.

Construction of a large gypsum-board plant and plaster mill and other improvements at the company's Medicine Lodge, Kan., plant are planned; and improvements and additions to its Fort Dodge, Ia., operation and a new $4,000,000 paper mill at Pryor, Okla., are the major items on the agenda.

Work on the new facilities at Medicine Lodge is under way. The Fort Dodge project is nearing completion. Construction of the $4,000,000 paper mill in Pryor, as announced previously, is scheduled to be completed in 1951.

The Canadian bureau of statistics reported that production of portland cement in the first eight months of 1950 totalled 10,902,698 barrels, as compared with 10,532,901 in the corresponding period of 1949.

Coming Events

January 16-18, 1951 — Washington. National Agricultural Limestone Association, Statler Hotel.

January 22-25, 1951 — Cleveland. 31st annual meeting and exhibit, National Concrete Masonry Association. Cleveland Auditorium.

January 28- February 1, 1951— Chicago. 32nd annual meeting, Associated Equipment Distributors. Stevens Hotel.

February 5-7, 1951 — Cincinnati. 34th annual convention, National Crushed Stone Association. Netherland Plaza Hotel.

February 7-9, 1951 — Cincinnati. 6th annual convention, Agricultural Limestone Institute. Netherland Plaza Hotel.

February 12-15, 1951 — New Orleans. 35th annual convention, National Sand and Gravel Association and 21st annual convention, National Ready Mixed Concrete Association. Roosevelt Hotel.

March 1-3, 1951—New York. 43rd annual convention, American Concrete Pipe Association. Waldorf-Astoria Hotel.

States Get Their Slices of $400,000,000 Federal Aid For Road Construction

Apportionment of $400,000,000 of the $500,000,000 authorized as Federal Aid to the states for highways in the fiscal year beginning July 1, 1951, was announced recently by the Department of Commerce. The funds were authorized by the Federal Aid Highway Act.

The apportionment was made using tentative figures for rural and urban population for each of the states. The remaining amount will be apportioned and proper adjustment made when final urban and rural population figures are reported by the Bureau of the Census.

The Act provides $225,000,000 for projects on the Federal Aid primary highway system, $150,000,000 for projects on the Federal Aid secondary system, and $125,000,000 for projects on the Federal Aid highway system in urban areas.

Funds will be expended under the general procedure in use for many years in which state highway departments propose projects, prepare plans, award contracts, and supervise construction, all subject to federal approval. Federal participation is limited to half the cost except in the public-lands states, where participation may be increased above 50 percent by one-half of the percentage of the area of the state that is public land.

Funds for the Federal Aid highway system are apportioned in proportion to area, population, and mileage of post roads, each being given equal weight. Funds for Federal Aid secondary roads are apportioned in the same manner except that rural population is used rather than total population. Funds for urban projects are apportioned in proportion to population in municipalities and other urban places of 5,000 or more.

In the apportionment made, final figures for 1950 total population of each state were used, but the division between urban population and rural population was based on preliminary figures. The funds apportioned will be available for expenditure until June 30, 1954.

The top five apportionments are given as follows: New York, $25,141,039; California, $20,417,231; Illinois, $17,712,601; Michigan, $13,441,845; and Missouri, $11,016,945.

November Construction Short of Oct. Figure But Tops Nov., 1949

Construction contract awards in the 37 states east of the Rockies in November totaled $1,087,062,000, or 4 percent less than the October figure of $1,135,815,000, but 14 percent more than the total for November, 1949, according to the F. W. Dodge Corporation.

The 11-month 1950 total of $13,332,623,000 was 41 percent higher than the corresponding total for 1949.

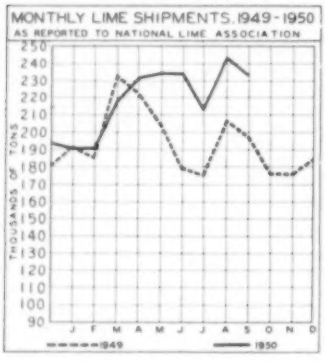
The total of square feet of floor area for the first 11 months of 1950 was 1,217,512,000 or 54 percent higher than the same total for last year.

Residential awards in November totaled $496,682,000, a decrease of 6 percent from October, but 14 percent higher than November, 1949. Non-residential awards totaled $434,894,000, or 2 percent higher than October and 63 percent higher than November, 1949.

Public and private works and utilities were $155,486,000 in November, or 13 percent below October and 39 percent lower than November, 1949.

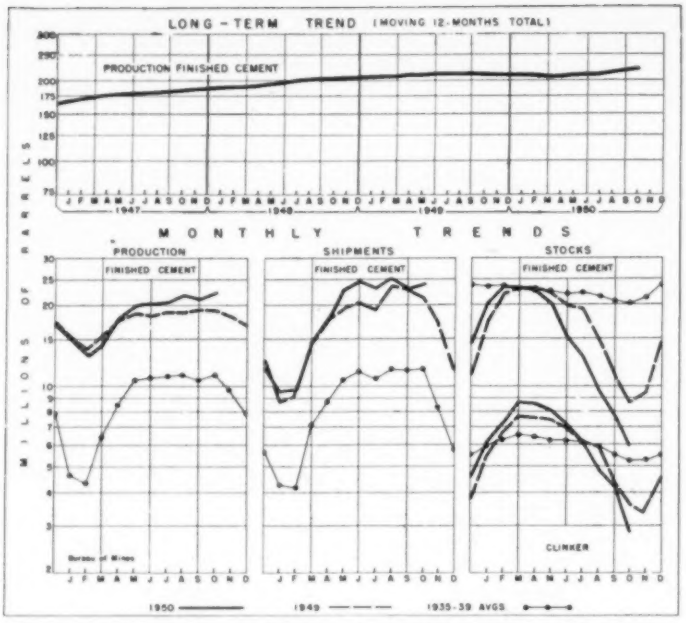
Pennsylvania Stone Producers Hold Annual Meeting

On January 26 the Pennsylvania Stone Producers Association will sponsor a meeting for all aggregates producers and those in allied industries. Officials of the Pennsylvania Department of Highways will attend and will present facts and figures on the 1951 highway program. Other prominent speakers will discuss new methods of highway construction.



According to data collected by the National Lime Association, 47 companies in September, 1950, shipped 233,381 tons of lime (139,998 quicklime; 93,383 hydrate). Reporting companies represent 60.5 percent of the association members' total capacity of record. Based on Pit and Quarry's estimate for the remainder of the industry, the total shipments were approximately 424,300 tons. Shipments by uses and grades for September, 1950, were:

	Quicklime	Hydrate
Agricultural	4,145	10,119
Building	18,185	51,370
Chemical	117,668	31,894
Totals	139,998	93,383



SUMMARY—The portland cement industry produced 22,488,000 barrels of finished cement in October, 1950, as reported to the U. S. Bureau of Mines. This total is 18 percent greater than that reported in October of the previous year. Mill shipments reached 24,172,000 barrels—14 percent above the October, 1949, figure, while stocks on October 31 were 30 percent below the corresponding period a year ago. Clinker output during the month amounted to 21,430,000 barrels—an increase of 17 percent over that of October, 1949.

PRODUCTION—The output of 22,488,000 barrels of finished cement in October, 1950, came from 150 plants in 35 states and Puerto Rico. In the same month of 1949, 19,070,000 barrels were produced in 146 plants. Clinker production was up 17 percent from the October, 1949, total.

SHIPMENTS—Mill shipments of 24,172,000 barrels increased 14 percent over the total reported for October, 1949. The demand for cement, as indicated by mill shipments, increased substantially over that of the previous month's (September, 1950) total of 22,910,000 barrels. Shipments were greater in 16 and smaller in 3 districts than those reported for October, 1949. The percentage changes range from a decrease of 8 percent in the Kansas district to an increase of 69 percent in the Indiana-Kentucky-Wisconsin district. Shipments increased 95 percent in the Puerto Rican district.

STOCKS—Stocks of finished cement on October 31 amounted to 5,958,000 barrels—30 percent below the October, 1949, total, while stocks of clinker were 2,850,000 barrels—or 21 percent below the figure for the same month of 1949.

Kelley Island Sales, Profits Expected to Hit Record High

The Kelley Island Lime & Transport Company recently reported an extra dividend which with those previously paid in 1950 brought to $2 the total annual per share dividend. In 1949 the total dividend was $1.50.

According to Ralph L. Dickey, president, Kelley and its subsidiaries were expected to chalk up earnings in excess of $1,250,000 for 1950, the largest in the last 22 years, with sales exceeding $12,000,000, an all-time high.

A rotary lime kiln described as "the largest in the Southwest" was opened on November 6 by the Limestone Products Corporation at Cleburne, Tex. The kiln, under construction for eight months, has a capacity of 150 tons of lime products per day. The company has been producing stone products for roofing, highway construction, and livestock feed for the last two years.

Federal Labor Regulations Outlined in New Bulletin

A new quick reference to the important federal labor laws and regulations of general application is now available in the Labor Department's Bureau of Labor Standards Bulletin No. 123, *Federal Labor Laws and Agencies.*

Information on government agencies and services available to management and labor in the field of working conditions and labor relations is also included in this bulletin, which supersedes the Bureau's Bulletin No. 100, published in 1948, and brings up to date the material contained in that publication.

A limited number of free copies are available from the Bureau of Labor Standards, U. S. Department of Labor, Washington 25, D. C. Sales copies may be purchased from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., for 30 cents each. A 25 percent discount is allowed on orders for 100 or more.

Smith W. Storey Elected P.C.A. Board Chairman At Chicago Meeting

Smith W. Storey, president of the General Portland Cement Company and of the Consolidated Cement Corporation of Chicago, was elected chairman of the board of directors of the Portland Cement Association at its annual meeting in Chicago on November 13, 14 and 15. Mr. Storey succeeds Walter C. Russell, president of the Peerless Cement Corporation, who has served as chairman of the board for the last two years.

The following four new directors were also elected: Donald S. MacBride, president, Hercules Cement Corporation, Philadelphia; F. A. Weibel, president, Allentown Portland Cement Company and vice-president, Valley Forge Cement Company, Catasauqua, Pa.; Eugene D. Hill, president, Louisville Cement Company, Louisville, Ky.; and Harold M. Scott, president, Keystone Portland Cement Company, Philadelphia.

Mr. Storey, long prominent in Chicago business and civic affairs, has a distinguished background of service in P.C.A. activities. He was first elected to the association's board of directors in 1933, and has also served as treasurer and as a member of the executive committee.

Mr. Storey was graduated from the University of Indiana, and has been associated with the cement industry for more than a quarter of a century. In 1935 he became president of the Consolidated Cement Corporation. He has been president of the General Portland Cement Company since its formation in 1947 as a result of the consolidation of Florida Portland Cement Company, Signal Mountain Portland Cement Company and Trinity Portland Cement Company. He had been president of these predecessor companies since 1946.

The retiring directors were: Ben W. Calvin, president, Aetna Portland Cement Company, Bay City, Mich.; H. B. Robeson, president, Nazareth Cement Company, Nazareth, Pa.; H. N. Snyder, president, Federal Portland Cement Company, Buffalo, N. Y.; and Erik Thune, president, National Portland Cement Company, Philadelphia, Pa.

Sanco—"Old" at 30 Years—Yields Job to Diesel Craft

At 30, tugboats are considered past their prime—a melancholy fact which sent a grand old lady of the Ohio River into retirement recently. The *Sanco*, called "the grandmammy of the Bedford-Nugent Company's gravel barge pushers", is a sternwheeler with three steam boilers. She tugged barges between Evansville, Tell City, and Rockport along the Ohio from September 20, 1920, until her honorable retirement last Autumn.

Succeeding the aging craft is the *J. W. Bedford*, a modern diesel towboat built by the Maxon Construction Company of Tell City. The *Sanco's* crew of 12 men will be transferred to the *Bedford*, according to James Nugent Sr., president of the firm.

• One of the two truck-trailer units recently purchased by the Northwestern Portland Cement Co., Seattle, Wash.

Lightweight Trailers Permit Bigger Payloads of Cement

Two Kenworth trucks and Utility trailers, specially designed for the transportation of bulk cement, were recently placed in operation by the Northwestern Portland Cement Company, Seattle, Wash.

Gordon Tongue, president of the Northwestern Portland Cement Company, stated that the new equipment "enables us to haul 110 bbls., or nearly half a carload of bulk cement on each trip".

The trucks are Kenworth Model 825's, powered by Cummins NHB 200-hp. diesels, and equipped with a five-speed Spicer main transmission and a three-speed auxiliary. Aluminum was used extensively in frames, hubs, and gear cases, to permit hauling of more payload.

The Utility trailers are gondola-type dual-axle semi's with a carrying capacity of 625 cu. ft. The sharply inclined hoppers are especially designed to facilitate rapid unloading. In addition to butterfly valves, the hoppers are also equipped with canvas boots to prevent loss on the highway or while unloading.

Quarry Operation Resumed After 13-Year Interval

The North Jersey Quarry Company recently resumed blasting operations at its quarry at Basking Ridge, N. J., after a 13-year interval. A 2½-ton load of dynamite ripped down 22,000 tons of trap rock, and a new crushing building was immediately put to use.

Established in 1895 by the Morris County Crushed Stone Company, the quarry has been used since 1937 as a reloading depot for rock hauled from the present owner's Bound Brook quarry.

Resumption of full-scale activities came after the company won a suit instituted by neighbors who declared that the operation would be a nuisance. Dust- and noise-control equipment of the new plant were praised by Dr. D. L. Leet, head of the seismograph station at Harvard University.

Cover Picture....

• Amid the scenic splendor of Glacier National Park, at the site of Hungry Horse Dam, a Bucyrus-Erie Model 6160 10-cu. yd. dragline is excavating sand and gravel from the South Fork of the Flathead River for the construction of the dam. The full story of this huge structure is told in this issue, pages 84-88.

Belgian Cement Industry On Upswing, Exports Expand

Belgium's cement production is steadily moving toward a new peak, according to reports from Brussels. During the first half of 1950 output totaled 1,565,970 tons, whereas for that period in 1949 the total stood at 1,329,773 tons.

Belgium normally exports one-third of its cement production, and until the outbreak of hostilities in Korea, markets were expanding in Asia, Africa, and the Western Hemisphere. It is expected that although eastbound shipments will be hampered, the slack will be taken up by larger exports to Holland and the United Kingdom.

Workers at the Minnesota Mining and Manufacturing Company in 1950 received approximately $1,000,000 in addition to their regular pay checks—the payoff in the firm's profit-sharing plan. It was the largest sum divided among 3M employees since the plan was launched 14 years ago.

Cement for Newfoundland Soon to Be Manufactured In Plant at Mt. Moriah

An important announcement regarding the cement industry of Newfoundland appears in *Mineral Trade Notes*, a publication of the U. S. Bureau of Mines. It has now been established that a new cement plant of 300,000 tons' annual capacity, furnished by Miag, Ltd., of Brunswick, Germany, will be installed at Mount Moriah, near the west coast port of Corner Brook. The project is understood to be a part of an intensive Newfoundland natural resources development campaign of the Provincial Government. It was stated that "it appears . . . it will be financed by government funds with the intention of interesting private capital in purchasing the completed plant".

Mount Moriah was chosen as the location because of the deposits of shale-containing limestone at Cook's Brook and because of the port facilities of Corner Brook. Moreover, a large supply of gypsum is located within 50 miles and additional limestone deposits at Aguathuna (accessible by water route). Hydroelectric power is available from the Bewater's Newfoundland Pulp and Paper Mill's sources.

Proportions of 65 percent limestone, 30 percent shale, and 5 percent gypsum are to be used for the product, a high-grade portland cement. Initial production will be held down to 100,000 tons of cement and 35,000 tons of agricultural limestone annually. It is estimated that the plant will provide work for 300 men on a 12-month basis. Newfoundland will probably absorb approximately 50,000 tons of cement annually; and it is hoped that the remainder will find a ready market without domestic competition in other parts of eastern Canada.

Excavation is under way at Mount Moriah, and construction has been let to a Corner Brook firm. A 4-mile road from the plant site to Corner Brook is planned, and a railway spur is expected to be constructed to the Canadian National Railway tracks.

Kentucky Fluorspar Co. Buys Inland Steel Tracts

The Kentucky Fluorspar Company has purchased the Illinois fluorspar properties of the Inland Steel Company, according to an announcement by R. N. Frazer, vice-president in charge of operations and sales.

The properties consist of five farm tracts and 60 acres in Rosiclaire. The purchase also includes the Hillside flotation mill, powerhouse, gravity mill, and headframe in Rosiclaire, Ill.

Texas Gulf Sulphur Company Cuts Shipments, Ups Price

Texas Gulf Sulphur Company, which recently cut shipments to customers 20 percent, has announced a price raise of $3 a ton. This brings the price to $21 a ton at the mine.

Stock of the company has reached a new high, as reports of shortages and price increases created more attention for the stock. Texas Gulf is also prospecting in Mexico for additional deposits; field reports are encouraging.

A. D. Warner Jr. Dies at 72 After Three-Day Illness

Alfred DuPont Warner Jr., vice-president and treasurer of The Warner Company, died on November 25 at a Wilmington, Del., hospital, after an illness of three days. Mr. Warner was 72 years of age.

A native of Wilmington, Mr. Warner

A. D. Warner Jr.

joined his father's firm upon his graduation from Cornell University in 1900. Five years later he was elected to the post which he held until the time of his death. He was one of the founders of the Rotary Club and president of the Delaware Chamber of Commerce from 1912 to 1921. Actively interested in the Boy Scout movement, Mr. Warner was awarded the Silver Beaver after 25 years of service in the organization and in 1944 the Silver Antelope for distinguished service.

During World War I Mr. Warner was connected with the Intelligence Bureau of the U. S. Navy. He was a member of various civic groups and honor societies. Surviving him, in addition to his widow, are three brothers, Irving, Charles, and Lee P. Warner, all officials of The Warner Company.

Dr. Edward R. Weidlein, director of the Mellon Institute, Pittsburgh, Pa., has announced that the National Association of Marble Producers has established in that institution a fellowship whose program of research is concerned with the development of specifications for marble for both outside and inside uses, with respect to suitability and durability for building purposes.

Chambersburg Stone Co. Abandons 27-Year-Old Site For Safer Location

Nature finally won—with water—in a long fight to end the Stoufferstown operations of the Chambersburg (Pa.) Stone Company. Owners Frank and Paul Walker decided last year to abandon the quarry, operated for 27 years, after it became apparent that further effort to work the deposit would be uneconomical. Underground streams at times pour water into the 140-ft. deep pit at the rate of 4,000 g.p.m.—and that's a lot of water. At present the quarry is filled to a depth of approximately 60 ft. Although the channel of the Falling Spring River nearby had been concreted by the firms, in an effort to divert water from the quarry, the attempt failed.

Since the quarry site is bounded on three sides by private properties, operation could have been extended only in one direction—nearer to the river. The company therefore began exploring the surrounding area for a possible location. Last May the erection of a modern quarry equipment was begun at the new site at New Franklin. Capacity of the new facilities are expected to be 150 to 175 t.p.h. of crushed stone.

Remaining at the Stoufferstown site will be the firm's transit concrete business. The decision to continue this operation at the old stand was made because of the availability of crushed stone—hundreds of thousands of tons in stockpiles—accessibility to trucks, and its proximity to Chamberburg.

The Monsanto Chemical Company has announced an expansion program of its facilities in Texas City, Tex. William M. Rand, president, stated that the program will cost $30,000,000.

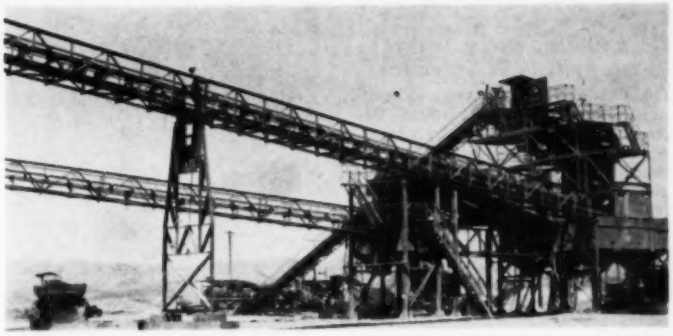
• With the statement of the National Foundation for Infantile Paralysis that "the nation now has the largest number of polio patients in history", goes a challenge to all Americans to awaken to the seriousness of the financial situation involved. Pit and Quarry urges its readers to contribute generously to the cause of fighting this disease during the 1951 March of Dimes campaign, January 15-31.

'49 Crushed Stone Output Drops Slightly to About 222,400,000 Tons; Value Up

The output of crushed and broken stone in the United States in 1949, as reported by producers to the U.S. Bureau of Mines, amounted to 222,408,140 short tons, valued at $289,695,520—a decrease of 1 percent in tonnage but an increase of 3 percent in value. Included in this total are stone sold or used for concrete aggregates, railroad ballast, metallurgical use (flux), agricultural limestone, refractory stone, riprap, in alkali, calcium carbide, sugar and glass factories, in paper mills, and in various other chemical and manufacturing processes. Stone used in the manufacture of open-market lime and cement, asphaltic stone, and slate used for granules and flour are not included in this total.

Crushed and broken stone used for concrete aggregates and railroad ballast (63 percent of the total output in 1949) increased 1 percent in quantity and 5 percent in value over 1948 totals. Eighty-nine percent of the 124,367,210 short tons used for concrete aggregate was produced by commercial operators and 11 percent by government agencies.

Metallurgical uses, which took 14 percent of the total crushed and broken stone in 1949, showed a decrease of 13 percent in quantity and a decrease of 7 percent in value, as compared with 1948. Limestone for agricultural purposes (10 percent of total tonnage of crushed stone in 1949) increased 3 and 4 percent, respectively, in quantity and value over the previous year's figures. Other uses consumed 29,165,540 tons (13 percent of total) valued at $50,835,269.



• Big mobile aggregate and batch plant in operation at Newman, Calif., produces 245-t.p.h. to specification.

Big Semi-Portable Plant To Travel to Third Location

One of the largest semi-portable aggregate and batch plants in the United States is being operated by the Western Contracting Corporation at Newman, Calif. Completely equipped with General Electric motors and control, the plant has a capacity of 245 tons of specification aggregate per hour and is designed and constructed so that it can be disassembled and moved to new job locations.

Originally built to supply highway paving aggregate, the plant was moved to Westly, Calif. in 1946 to produce aggregate for the Delta-Mendota Canal. It was then moved to its present site near Newman, Calif., a distance of about 20 miles, where it was re-assembled and in operation in only ten days.

The batch plant has supplied aggregate for over 45 miles of the Delta Mendota Canal which, when completed, will supply the San Joaquin Valley with additional water for irrigation.

The General Electric motors on this installation range from the 7½-hp. speed reducers which drive the conveyor belts at various stages of the process, to a 150-hp. motor which operates a rock crusher at the beginning of the conveyor system.

When operations at Newman have been completed, the plant is scheduled to be disassembled and shipped to a third location at Yuma, Arizona, where it will be reassembled to produce aggregate for the new Welton-Mohawk Canal.

Keizer Sand and Gravel Company, Salem, Ore., is now owned by Howard A. Jones, John A. and Charles H. Heltzel. The firm was formerly owned by Mr. Jones and Julius Schuetz.

• An aerial view of the Dewey Portland Cement Company's plant near Davenport, Ia., where an 11- by 375-ft. all-welded rotary kiln was recently installed in the record time of 14 days. The big kiln (center) is seen as it looked from the air during installation proceedings. (See Pit and Quarry, December, 1950, p. 94, for the full story.)

$2,000,000 Cement Plant Of 900-Bbl. Daily Output Being Built in El Salvador

The state of El Salvador, Central America, will soon have a $2,000,000 cement plant, the first to be built in the republic. The facilities, now under construction, are located near the Pacific port of Acajutla. Financing of the project is reported to be by Salvadorean and United States private capital. Major shareholders in the concern include James C. Smoot, North Carolina industrialist; Roberto Quinonez, present minister of agriculture; and Jaime Hill, Tomas Regalado, and Antonio Belismelis.

Officials of the new firm stated that if present plans go through, the plant will be producing cement by late July or early August of this year. Machinery has been ordered from Allis-Chalmers, and the plant is being constructed by the MacDonald Engineering Company.

Jose Antonio Rivera, secretary of the company, stated that when the plant attains full production, it will be able to produce 900 bbls. of cement daily, more than enough for El Salvador's present consumption needs. He added that as soon as cement is made available, the demand will probably rise steadily in El Salvador.

The site at Acajutla was selected because of the deposits of crushed mollusk shells thrown up on the beaches by the Pacific Ocean, resulting in layers from 20 to 25 ft. deep. This material will be used in place of sand in the manufacture of cement. The Salvador Railway Company, Ltd., is building a branch line to the new plant.

No tax will be charged on exports of cement produced in the factory; but the business must be organized as a corporation under the republic's laws. Certain standards of quality will be set up by the state, and the plant must give priority to needs of the state in its sales up to 50 percent of production, at 20 percent reduction in price.

James A. Anderson Heads Highway Officials' Group

James A. Anderson, state highway commissioner for Virginia, was recently elected president of the American Association of State Highway Officials at the annual convention of the association in Miami, Fla.

Mr. Anderson was educated at the Virginia Military Institute and received his civil engineering degree at Cornell University. After having served in the U. S. Army as lieutenant colonel during World War I, he taught civil engineering at V. M. I., serving at the same time as town engineer of Lexington, Va. On leave of absence from his teaching duties, he served as state engineer and state director of the U. S. Public Works Administration in 1933. Four years later he became dean of the V.M.I. faculty, a postion carrying with it a brigadier-general's commission in the Virginia

James A. Anderson

State Guard. During World War II General Anderson was coordinator for the State Defense Council, and in 1941 he became Virginia's state highway commissioner.

To meet changing highway conditions, Mr. Anderson established an urban division, a cost-analysis office, a public relations section, and an electrical cost-accounting system. He was named first vice-president of the American Association of State Highway Officials in 1949.

18 Is New Minimum Age Set By Tobin in Hazardous Jobs

Secretary of Labor Maurice J. Tobin has adopted a new hazardous occupations order establishing a minimum age of 18 for employment of minors under the Fair Labor Standards Act (the Federal Wage-Hour Law) in occupations connected with mining, other than coal, effective on January 6.

The general minimum age for employment under the Fair Labor Standards Act is 16, but the act authorizes the Secretary of Labor to issue hazardous occupations orders establishing a minimum age of 18 for employment in occupations which he finds "particularly hazardous."

New Research Editor Joins Staff of Pit and Quarry

Eldred E. Green has joined the staff of PIT AND QUARRY as research editor. In this capacity he will be responsible for the production of the PIT AND QUARRY HANDBOOK, and with the preparation of market surveys.

Mr. Green is a graduate of the University of Chicago, and has a background of many years of experience in the publication and construction machinery fields which makes him familiar with the many types of equipment and the various methods used in the nonmetallic minerals industries.

Marblehead Lime Co. Elects Lester Crown to Post of Vice-President

Lester Crown has been elected vice-president and chemical engineer of Marblehead Lime Company, according to an announcement by W. E. Wing, president.

Mr. Crown received his degree in chemical engineering from Northwestern University in 1946 and following gradua-

Lester Crown

tion taught in Northwestern's School of Engineering. Later he attended and was graduated from the Harvard Graduate School of Business Administration.

Marblehead Lime Company is one of the principal lime producers within a radius of 200 miles of Chicago, with plants at South Chicago, Quincy, and Thornton, Ill., and Hannibal, Mo.

Control of Cement Exports Taken by Mexican Government

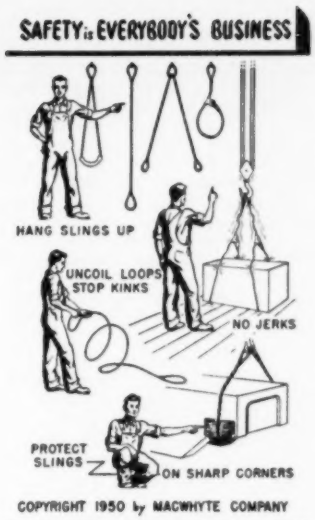
According to reports from Mexico City, export of cement, one of the Mexican products which has been actively sought by importers in the United States, has been placed under government control. All future shipments to foreign countries will have to be authorized by the Ministry of National Economy under the terms of a government decree. Object of this step is to prevent a domestic shortage, with resulting speculation and black marketing. Mexico now produces more than 1,000,000 metric tons of cement each year.

Concurrently with the announcement on the "embargo," it was reported that the federal government had granted importers of bags for cement a "subsidy" to lower their cost. The nature of the subsidy was not revealed. Cement producers had complained that under the Mexican system of determining import duties by weight, such bags cost them over 15 (United States) cents apiece, a rate which they claimed would force an increase in cement prices. The subsidy is expected to be abolished when two bag plants begin production this year.

1. A cutting edge cuts the life of your sling—use blocking, padding, or a corner saddle.
2. Take out the kinks—your sling is like your job, it does better work when the kinks are removed.
3. Don't send a boy to do a man's job—use a sling large enough for the load.
4. Keep jerks away—jerking may double the stress in your sling. Lift load gradually.
5. Your sling is like your hat—hang it up after each use and it will be clean, undamaged, and ready for the next job.

The above points will increase your safety and make your slings last longer.

MACWHYTE COMPANY • KENOSHA, WISCONSIN



New Safety Card Approved By Industrial Safety Men

An illustrated pocket-size card prepared by the Macwhyte Company, Kenosha, Wis., gives tips on proper care and use of slings for safe handling. (See illustrations above.)

Safety directors and engineers voiced their approval at the recent National Safety Congress. The Macwhyte Company, manufacturers of wire rope and braided wire rope slings, created the card for the promotion of greater safety in their plants.

The safety card is available to superintendents and safety directors for distribution to riggers, crane followers, floormen, and maintenance men.

A handbook outlining the uses and methods of applying various asbestos-cement materials and products can be obtained without charge by writing to the Asbestos-Cement Products Association, 509 Madison Avenue, New York 22, N. Y.

• Marquette Cement Manufacturing Company's director of Public Relations, Jack K. White (right) is here shown receiving an "Oscar of Industry" from Weston Smith, executive vice-president of Financial World at the Awards Banquet held in New York on October 30. The Oscar went to Mr. White for excellence in annual reporting.

Oregon Portland Cement Company recently called for retirement of the last of its outstanding preferred stock; and checks at the rate of $105 per share, plus accrued dividends, were distributed to holders of December 15. The move represents the completion of a 20-year program during which the firm has retired two issues of preferred stock aggregating more than $2,000,000.

Trustees of Hygiene Foundation Name New Managing Director

Dr. C. Richard Walmer, medical director of the Industrial Hygiene Foundation, has been named managing director to succeed the late John F. McMahon. The announcement was made by Dr. Edward R. Weidlein, Director of Mellon Institute, following action of the foundation's board of trustees. This organization operates under the auspices of Mellon Institute.

The Industrial Hygiene Foundation is a nonprofit research organization of more than 350 companies and industrial associations for advancing industrial health, improving working conditions and bettering human relations.

House Agriculture Committee Takes No Action on S. 2635

According to a bulletin from Henry A. Huschke, managing director of the Agricultural Limestone Institute, the House Committee on Agriculture decided to take no action on S. 2635.

This bill, if passed, would have permitted the Secretary of Agriculture to change the regulations which apply to purchase orders and the establishment of "fair prices." Such a change in regulations would have allowed a farmer to take his purchase order to any seller of limestone of his choice. He would not be required, as at present, to deal only with sellers whose prices do not exceed the "fair price."

Final Figures Show New Record Of Cement Output for 1949

The demand for cement in 1949 was exceptionally high; consequently a new production record was attained. The output of 209,727,417 bbls. of portland cement from 150 plants, as reported to the U. S. Bureau of Mines, was 2 percent greater than in 1948. On the other hand, the production of other hydraulic cements—natural, masonry (natural), and pozzolan (slaglime), by nine plants totaled 3,185,229 bbls.—a decrease of 7 percent from the previous year.

The demand for portland cement, as gauged by shipments from mills, increased to 206,080,325 bbls., valued at $473,177,032, from 204,304,662 bbls., valued at $445,678,073 in 1948. This increase in shipments of portland cement was due to the high rate of construction throughout the United States. The average value of $2.30 per bbl. in 1949, as compared with $2.18 in 1948, reflects the continued rise in labor and manufacturing costs. Shipments of "other" hydraulic cements declined to 3,233,525 bbls. from a total of 3,375,135 bbls. in 1948. The average price in 1949 was $2.48 per bbl.

Mill stocks of portland cement on hand December 31, 1949, totaled 14,740,282 bbls., an increase of approximately 33 percent over the corresponding date of 1948. Stocks of "other" cements declined from 209,901 bbls. to 161,605 in 1949. Without exception, all districts showed increases in stocks at the year-end over the preceding year; these increases ranged from 2 percent in the Michigan, California, and western Missouri-Nebraska - Oklahoma - Arkansas districts to 119 percent in the Alabama district. The trend of month-end stocks of clinker in 1949 followed essentially the pattern of 1948, as the peak was reached in March and the low was in November.

The total estimated annual capacity of the portland cement industry in 1949 was 258,948,399 bbls., as compared with 254,272,378 bbls. in 1948. The capacity utilized during the year was 81 percent—the same as in 1948. Capacity estimates indicated gains in 10 and declines in 8 manufacturing districts, while one district maintained the same total.

Of all the fuels used in the manufacture of portland cement (coal, fuel oil, natural gas, and by-product gas), only natural gas showed an increase in the amount consumed in 1949.

Portland cement in 1949, as in 1948, was transported largely by railroad (78 percent), followed by truck (21 percent). Shipments by boat accounted for the balance.

Explosion and Fire Close Natl. Gypsum's Plant At Akron, Ohio

Fire that followed an explosion believed to have been caused by an accumulation of coal dust caused damage estimated at several thousand dollars to the boiler room of the Akron plant of the National Gypsum Company, Akron, Ohio on December 10.

Plant Manager Lloyd S. Moore said the exact amount of damages could not be estimated immediately, since the motors were soaked with water. The plaster board plant was forced to shut down temporarily.

Compania Cemento Makes Panama a Cement Exporter

The Republic of Panama no longer imports cement; it is now an exporter. This reversal came about by the establishment of Compania Cemento Panama, S.A. Its plant, located near Panama City, has a capacity of 300 tons daily, which takes care of all local requirements formerly met by imports and leaves a surplus for export. The cement is high quality, passes all tests, including A.S.T.M., and has been used extensively in the Panama Canal, where it meets government bids in competition with leading United States producers.

Other Latin American countries have been large purchasers from Compania Cemento, including Colombia, Venezuela, Costa Rica, and Ecuador. Tariff protection within the country of Panama has aided the company in capturing the local market, as imported cement must pay duty.

At the Century Cement Manufacturing Company, Rosendale, N. Y., an election designated the United Cement, Lime and Gypsum Works International Union, Local 129, the bargaining agent for the firm's employees.

Burning Truck Causes $25,000 Fire Loss to Essex Sand-Gravel Plant

Damage totalling in excess of $25,000 was estimated as the fire loss of the Essex Sand and Gravel Company near Peabody, Mass., when flames swept its facilities recently.

A truck owned by another company had just unloaded a supply of highly inflammable material into one of the Essex tanks when a small fire broke out beneath it. The vehicle was enveloped in flames, and despite the efforts of workers to extinguish it, the blaze spread to the plant structure.

Egypt ranks sixth among the world's phosphate producers, with an annual output of 394,000 tons. Principal mining areas are in the Nile Valley region, the Libyan desert, and the Red Sea district.

Diesel-Electric Power Seen For Heavy Construction Equipment

Diesel-electric power for heavy equipment is in prospect, said officials of R. G. LeTourneau, Inc., Peoria, Ill., recently as they demonstrated a new prime mover, the "Tournatow" at Chicago's Edgewater Beach Hotel. The revolutionary new machine utilizes the same means of power production and transmission which propels the famous streamlined trains, and similar innovations may be in store for many industrial applications. The method of locating electric motors at the place where power is needed is said to solve many of the problems of equipment design and manufacture. In the Tournatow each wheel is motorized and independently swivel-mounted, so that four-wheel driving and four-wheel steering are achieved. Push-button controls and simple controller handles replace the pedals, levers, and wheels of the conventional operator's station.

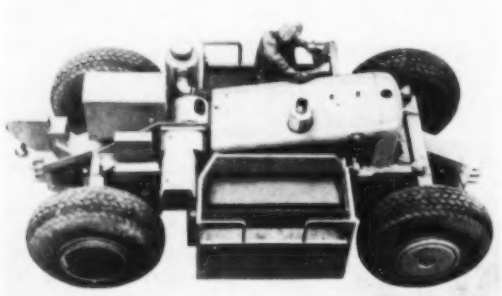
Small, powerful electric motors (an 11-in. one producing 50 hp.), are mounted integrally with the wheels and winch by simple reduction gears which eliminate the need for clutches, transmission, differential, universal joints, and linkages required in standard four-wheel drive equipment. Smoothness of operation is assured by the continuous increase in speed without the interruption of changing gears, and direction is reversed merely by reversing the motor. Steering is accomplished by connecting each pair of wheels to a motor, so that front-wheel steering, rear-wheel steering, or both can be used. The operator can make sharp turns or travel obliquely by varying the angle of each pair of wheels.

High starting torque of the d.-c. drive motors gives ample power for starting heavy loads and delivers maximum power under all load conditions, and the use of d.-c. motors also provides regenerative braking on grades. In addition, each motor, including steering and winch, has a built-in multiple-disc, spring-engaged, magnet-released brake. This automatically holds the motor stationary when the current is off.

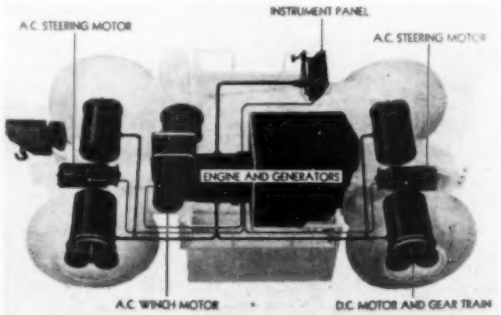
Use of electric power permits a wide range of speed and power without varying the speed of the generators. Consequently the diesel engine is not subjected to wear-producing acceleration and deceleration as in clutch and gear operation. The engine is run at constant speed for the required generator performance.

Current for the Tournatow motors is produced by an a.-c. and a d.-c. generator mounted in line to a G.M. 671, 6-cylinder, 2-cycle diesel engine delivering 186 hp. at 1800 r.p.m. The a.-c. generator supplies current for starting, battery charging, steering, and winch motors, while the d.-c. generator supplies the driving motors only.

At the present the Tournatow is being shown as a demonstration model. When it was exhibited before Army officials, it developed ample power to maneuver giant aircraft of 400,000 lbs., more than 16 times its own weight. Commercial production is dependent on the availability of certain critical war materials.



• What the camera sees when trained on one of the new diesel-electric units from a position above the prime mover.



• A phantom view of the same piece of equipment, showing the location and inter-relation of the important parts.

30 years ago in Pit and Quarry

By WALTER E. TRAUFFER

THE feature of the January, 1921, issue of PIT AND QUARRY was the preview of conditions for the nonmetallic minerals industries in 1921. Letters from numerous prominent men in these various industries were reproduced in full and gave a very comprehensive picture of prospects as seen from within. Among those giving their views were: John Rice, president, National Crushed Stone Association; Charles Warner, president, National Lime Association; V. O. Johnston, president, National Association of Sand and Gravel Producers; W. M. Kinney, general manager, Portland Cement Association; F. R. Kanengeiser, president, National Agricultural Limestone Association; Raymond B. Ladoo, secretary, Talc and Soapstone Producers Association; A. P. Sandles, secretary, National Crushed Stone Association; E. Guy Sutton, business manager, National Association of Sand and Gravel Producers; H. J. Gerhardstein, president, Great Lakes Sand and Gravel Producer's Association; C. E. Walsh, secretary, Nebraska Mineral Aggregate Association; Ben Stone, secretary, Illinois Sand and Gravel Producers Association; F. W. Connell, secretary, Indiana Crushed Stone Association.

In general, these men were optimistic about the prospects for 1921, being almost unanimous in their belief that construction of various kinds must increase because it was so far behind our needs. It was pointed out that we were in our second depression since the end of World War I and that a quick rebound could be expected. Some were of the opinion that the past year would have been a good one for these industries if shipments had not been held down to such an extent by car shortages, largely artificial, due to I.C.C. priorities favoring coal. Others pointed out that even the reduced volume of business of 1920 would have been considered good six or seven years before. One prophetic note was sounded to the effect that the recent increase in freight rates would increase the amount of portable plant competition, and established producers were advised to get into this field themselves.

The other articles in this issue seemed to indicate that nonmetallic minerals producers as a whole were willing to back up their faith in the future. Numerous articles and news items described outstanding new plants or told of plants under construction or planned.

Outstanding was the completion by the Utah Sand and Gravel Company at north Salt Lake City of a new 150-cu. yd. per hr. plant which was the last word in design, construction and equipment. Power scrapers were used to bring material from the deposit to the crushing station on a hillside, and a conveyor across a suspension bridge connected to the main plant. This company, which now operates as the Utah Sand and Gravel Products Corporation, was incorporated in 1920, taking over the Ryberg Bros. Sand and Gravel Company. Eric W. Ryberg was vice-president.

Another new plant described was that of the Lone Star Stone Company at Chico, Tex., which had a capacity of 1,500 tons of crushed stone daily. A 7,500-ton per day crushed stone plant under construction was also described in detail. This plant, near Fultonham, O., was being built by the Limestone Products Department, Columbia Chemical Division, Pittsburgh Plate Glass Company, to supply the raw limestone for the chemical plant at Barberton, O. Previously the stone used had been purchased. The new plant of the Medford Washed Sand and Gravel Company, Medford, Minn., and that of the Marquette Stone Products Company, Marquette, Ia., were also described and illustrated.

In the news was the Alpha Portland Cement Company, which had purchased the plant and business of the Ironton Portland Cement Company, Ironton, O. Plans were well under way for the construction of the new $6,000,000 plant of the Signal Mountain Portland Cement Company, near Chattanooga, Tenn. The American Limestone Company had built a new limestone pulverizing plant at Mascot, Tenn.

Association affairs were well represented in this issue, especially those of state groups. The Indiana Sand and Gravel Association held its sixth annual convention at Indianapolis. New officers elected were as follows: president, M. A. Neville, Western Indiana Gravel Company; vice-president, G. J. Nattkemper, Summit Sand and Gravel Company; secretary-treasurer, G. V. Miller, Granite Sand and Gravel Company.

Missouri and Illinois agstone producers met at St. Louis on December 8, 1920 to arrange the formation in those states of branches of the National Agricultural Limestone Association. The Missouri producers formed an embryonic association with officers, and those from Illinois decided to hold another meeting soon for the same purpose.

The Nebraska Mineral Aggregate Association met at Omaha on December 15, with freight rates and priorities the chief subjects for discussion. The Wisconsin Mineral Aggregate Association met in Milwaukee on December 16. New officers elected were: president, John D. Ohrt, Davis Bros. Stone Company; vice-president, J. K. Jensen, Janesville Sand and Gravel Company; secretary-treasurer, I. M. Cliquennoi, Wisconsin Sand and Gravel Company.

Special articles on timely subjects had to do with railroad car priorities and federal aid extension. There was also an article describing methods and costs of hydraulic stripping.

Gray and Field Elected To Asphalt Institute Offices

The board of directors of the Asphalt Institute, representing the major part of the petroleum asphalt production industry of the United States and Canada, elected Frank R. Field, Esso Standard Oil Company, chairman of the executive committee for the coming year and re-elected Bernard E. Gray, president.

Herbert Spencer was re-elected secretary of the Institute; George R. Christie, Socony-Vacuum Oil Company, Inc., was re-elected treasurer; and John N. Smith, also of Socony-Vacuum Oil Company, Inc., assistant treasurer.

Mining Equipment Described In Mines Bureau Bulletin

New and unique equipment developed by the U. S. Bureau of Mines for placing men in position to scale loose rock from walls, pillars and roofs of high stopes or rooms in underground mines is described in a report made public by Bureau Director James Boyd.

Although the equipment was developed and is currently being used at the Bureau's experimental oil-shale mine near Rifle, Colo., it is suitable for use in many of the country's underground limestone mines and in the extraction of other minerals mined in high stopes by room-and-pillar methods, the publication notes.

The four new types of roof-scaling apparatus described in the report are as follows: a boom-type scaling rig with a self-leveling platform constructed on a small, tractor-powered traveling crane; a conventional fork-lift truck designed to provide a remotely controlled working platform; a platform mounted on a telescoping tower; an industrial gun and lightweight scaling bars.

Free copies of Report of Investigations 4739, *Some Innovations in Equipment for Scaling High Roofs and Mine Walls*, may be obtained from the Publications Distribution Section of the Bureau of Mines, 4800 Forbes Street, Pittsburgh 13, Pa.

Newly-Signed Contracts Assure Potash Production

The Potash Company of America, the United States Potash Company, and the International Minerals and Chemicals Corporation, all in the Carlsbad, N. M., area, have signed contracts with the International Union of Mine, Mill, and Smelter Workers, Local 415. The action ended a year-long period of labor unrest and uncertainty, including a 73-day strike which paralyzed production.

Term of the new contract is to May, 1952. Among the points agreed upon are a 5-cents-an-hour wage raise and additional cost of living adjustments.

West Lake Quarry and Material Company, Florissant, Mo., has acquired a 48-acre tract adjoining its present quarry to provide for future expansion.

Convention Programs

Netherland Plaza Hotel, Cincinnati, O.

National Crushed Stone Assn. - Feb. 5-7
Agricultural Limestone Institute - Feb. 7-9

N. C. S. A.

SUNDAY, FEBRUARY 4

9:00 - 5:30—Registration—Fourth floor foyer

MONDAY, FEBRUARY 5

8:30 - 5:30—Registration—Fourth floor foyer

Morning Session—Pavillon Caprice

J. Reid Callanan, president, National Crushed Stone Association; president, Callanan Road Improvement Co., South Bethlehem, N. Y., presiding

9:15—Motion Picture

10:00—Greetings from the president—J. Reid Callanan

10:15—Report on Business Conditions During 1950 and the Outlook for 1951—A summary of reports by regional vice-presidents presented by the president—J. Reid Callanan

10:30—Report of Engineering Director—A. T. Goldbeck

11:00—Report of Field Engineer—J. E. Gray

11:30—Report of Administrative Director—J. R. Boyd

12:00—Adjournment

Greeting Luncheon—Hall of Mirrors

1:00

G. A. Austin, president, Consolidated Quarries Corp., Decatur, Ga., presiding

Today's World — Tomorrow's Peace — Rear Admiral Ellis M. Zacharias, U.S.N. (Retired), former deputy director of naval intelligence, author of Secret Missions, New York, N. Y.

Afternoon Session—Pavillon Caprice

E. F. Haberkern, production manager, Columbia Quarry Co., St. Louis, Mo., presiding

2:30—Quarry Lubrication

2:50—Discussion

3:00—Use and Abuse of Conveyor Belts

3:20—Discussion

3:30—Preventive Maintenance—Round table discussion including among others the following topics:

- Wire rope
- Winter repairs
- Salvaging and rebuilding wornout parts
- Maintenance of electrical equipment
- Pneumatic tires

5:00—Adjournment

Evening—Pavillon Caprice

6:30 - 8:30

Cocktail party followed by a buffet dinner

TUESDAY, FEBRUARY 6

8:30-5:00—Registration—Fourth floor foyer

Morning Session—Pavillon Caprice

9:15—Latest Developments in Machinery for Macadam Base Construction—Motion picture presented by Fred E. Swineford, engineer-director, Macadam Pavements, Inc., Columbus, O.

10:00—Committee reports:

- Auditing committee
- Resolutions committee
- Membership committee
- Accident prevention committee

10:30—The Importance of Highways to National Defense — Lt. Gen. Eugene Reybold, executive vice-president, American Road Builders' Association, Washington, D. C.

11:00—The Design of Pavements for the New Jersey Turnpike—O. J. Porter, consulting engineer, Newark, N. J.

11:30—Address

12:00—Adjournment

Manufacturers Division Luncheon—Hall of Mirrors

12:30

ANNUAL BUSINESS MEETING

This is a luncheon meeting for members of the Manufacturers Division only

Afternoon Session—Pavillon Caprice

Warren C. Rowe, president, Rowe Contracting Company, Malden, Mass., presiding

2:30—The Practical Use of the Corps of Engineers Tests on Bituminous Concrete—speaker from Corps of Engineers, U. S. Army Waterways Experiment Station, Vicksburg, Miss.

3:00—Manpower Problems as Related to Selective Service—Col. Joseph D. Griffing, chief, Manpower Division, National Selective Service Headquarters, Washington, D. C.

3:30—Address—John C. Gall, Gall and Lane, Washington, D. C.

4:00—Discussion

4:30—Adjournment

WEDNESDAY, FEBRUARY 7

8:30 - 5:00—Registration—Fourth floor foyer

Morning Session—Pavillon Caprice

Joint Session of N.C.S.A. and A.L.I. for Operating Men and Equipment Manufacturers

G. D. Lott Jr., vice-president, Palmetto Quarries Co., Columbia, S. C., presiding

9:00—Motion picture

9:30—Panel discussion on operating problems:

- Jaw vs. Gyratory Crushers in Primary Crushing
- Surge Piles vs. Close-Coupled Plants
- Single Surface vs. Multiple-Deck Screens
- Drop Ball vs. Drilling in Secondary Blasting

12:00—Adjournment

Joint Luncheon of N.C.S.A. and A.L.I.—Hall of Mirrors

1:00

P. E. Heim, president, Agricultural Limestone Institute, vice-president, Carbon Limestone Co., Lowellville, O., presiding

Inspirational Address—Colonel Harold G. Hoffman, former governor of New Jersey

Presentation of safety awards

Afternoon Session—Pavillon Caprice

Joint Session of N.C.S.A. and A.L.I.

Wilson P. Foss III, president, New York Trap Rock Corp., New York, N. Y., presiding

3:00—Shop Talk on Employee Relationships—Hiram S. Hall, vice-president, Bigelow-Sanford Carpet Co., New York, N. Y.

4:30—Adjournment

Evening

Joint Reception of N.C.S.A. and A.L.I.—Pavillon Caprice

6:00

Joint Banquet of N.C.S.A. and A.L.I.—Hall of Mirrors

7:00

J. Reid Callanan, president, presiding

Crushed Stone Association.

Inspirational and humorous address—James E. Gheen, New York, N. Y.

A. L. I.

(Note: Joint sessions of the two associations are listed above under Wednesday, Feb. 7.)

THURSDAY, FEBRUARY 8

9:00-5:00—Registration—Fourth floor foyer

Morning Session—Pavillon Caprice

P. E. Heim, president, Agricultural Limestone Institute, presiding

9:30—Treasure Islands — Motion picture through courtesy of Hawaiian Pineapple Co., Ltd.

10:00—Call to order and greetings from the president—P. E. Heim

10:15—Report of Managing Director—Henry A. Huschke

10:45—Report of Secretary-Treasurer—J. R. Boyd

11:15—Soils, Plants, Animals, and Men Need Lime—Dr. Firman E. Bear, chairman, Soils Department, Rutgers University, New Brunswick, N. J.

12:00—Adjournment

LUNCHEON—Hall of Mirrors

12:30

Uncle Sam and the Prodigal Son—Major Norman A. Imrie, Columbus, O.

Afternoon Session—Pavillon Caprice

2:30—Procedure for Furnishing Conservation Materials for 1951—Roland Crumpler, chief, Conservation Materials and Services Section, Production and Marketing Administration, Washington, D. C.

3:15—Symposium on limestone spreading

4:45—Adjournment

FRIDAY, FEBRUARY 9

9:00-12:00—Registration—Fourth floor foyer

Morning Session—Pavillon Caprice

9:30—The Rebirth of the Good Earth—P. E. Grubb, plant manager, DeKalb Agricultural Association, Inc., Johnstown, O.

10:00—The Place of Lime in Farm Economy—Dr. Jackson B. Hester, soil technologist, Campbell Soup Co., Riverton, N. J.

10:45—Limestone, Agriculture, and Grassland Farming—R. Willis Stout, soil editor, The Kentucky Farmer, Louisville, Ky.

Annual Business Meeting

11:30

P. E. Heim, president, Agricultural Limestone Institute, presiding

Report of auditing committee

Report of resolutions committee

Report of nominating committee and election of officers and members of the board of directors

Greeting of president-elect

12:15—Adjournment

Afternoon

2:30—Meeting of newly elected board of directors—Parlor G

Preliminary Convention Programs

Roosevelt Hotel, New Orleans, La.

National Sand and Gravel Assn. and National Ready Mixed Concrete Assn., Feb. 12-15

MONDAY, FEBRUARY 12

Proceedings will start on Monday, February 12, with the annual meetings of the two boards of directors. They meet separately but come together for luncheon.

TUESDAY, FEBRUARY 13

The two associations will open their conventions with a joint session on Tuesday morning, February 13. The two presidents will make their annual addresses; Stanton Walker and Vincent Ahearn will submit their annual reports; and there will be an address on the highway program for 1951 by Robert J. Potts of Harlingen, Tex., a former president of the National Sand and Gravel Association and presently a member of the Texas Highway Commission.

The two associations will have a joint luncheon on Tuesday. The speaker will be the Mayor of New Orleans, the Honorable DeLesseps S. Morrison.

On Tuesday afternoon there will be two simultaneous sessions. The principal session will be devoted to a discussion of operating problems in the sand-and-gravel industry. Mr. Walker will present a discussion of the fundamentals of aggregate specifications, which will be followed by a paper on crushing by Fred C. Bond of the Allis-Chalmers Company, and one by Frank Penepacker, president, Pacific Building Materials Company, Portland, Ore., who will describe his company's plant, in which sand is classified into eight different sizes.

The simultaneous session on Tuesday afternoon, designed to be of interest to both sand-and-gravel and ready-mixed concrete producers, will deal with financial affairs. Among the subjects to be covered will be the new excess profits tax, renegotiation, depletion and depreciation practices, certification of emergency facilities for accelerated amortization, the 3 percent tax on the transportation of property for hire, and cost determination practices for sand-and-gravel and ready-mixed concrete plants.

WEDNESDAY, FEBRUARY 14

On Wednesday morning there will also be simultaneous sessions. The principal one will be a joint session devoted to a round-table discussion of emergency regulations including wage and price control; priority regulations; allocation of critical materials for maintenance, repair and operation supplies; construction curtailment regulations; defense construction requirements; and manpower controls, including deferment of essential personnel.

The simultaneous session will be a Clinic on Calculating Concrete Proportions conducted by Mr. Walker and Mr. Bloem. This session is being conducted as a supplement to the annual short course conducted at the University of Maryland by the two associations. Basic principles of concrete mix design will be illustrated by a series of problems dealing with calculation of yield, corrections for air entrainment, selecting proportions for specified strength, etc.

The policy of simultaneous sessions will be continued on Wednesday afternoon. The principal session will deal with operating problems in the ready-mixed concrete industry. While final arrangements have not been completed, emphasis will be placed on the problem of mounting truck mixers for maximum pay load consistent with legal limitations on axle load. There will also be a round-table discussion on a number of other operating problems, with particular attention to those involved in producing concrete of uniform quality.

The simultaneous session on Wednesday will deal with problems of labor relations, including applicability of federal laws in this field. There will be discussion of the trend in recent labor agreements in the sand-and-gravel and ready-mixed concrete industries, with specific reference to wage rates, hours of work, and general conditions of employment. There will be a review of present practices in the two industries with respect to such matters as group insurance, group hospitalization, sickness and accident insurance, and retirement and pension plans. Among the federal laws applying to the two industries which will be considered are the Taft-Hartley Act, the Wage and Hour Law, the Walsh-Healey Act, and others.

THURSDAY, FEBRUARY 15

The morning session will be the closing one for N.S.G.A., with no simultaneous session. The election of officers will be held, and safety trophies and certificates will be presented. A representative of the Army Corps of Engineers has been invited to present a paper on researches in concrete aggregates. A. H. Smith, president of the A. H. Smith Sand & Gravel Company, Branchville, Md., will discuss the problem which confronted his company as a result of a decision by a Maryland court which prohibited him from introducing waste materials into a navigable stream, under a Maryland law prohibiting pollution of navigable streams.

The Thursday afternoon session will be the closing one for N.R.M.C.A. It will be devoted to election of officers for 1951 and to the presentation of trophies and certificates for safety achievement. The always-popular clinic on merchandising practices will also be held, with special regard to problems introduced by the use of admixtures, air entrainment, and lightweight aggregates. There will be a discussion on merchandising problems growing out of strength specifications and other guarantees of quality.

The closing N.R.M.C.A. program will also include a discussion of the problem of inadequate cement supply in 1950, and a consideration of the prospective cement supply in 1951.

Simultaneously there will be a session of the Concrete Clinic inaugurated at the Wednesday morning session, under the direction of Mr. Bloem.

REGISTRATION AND ENTERTAINMENT PLANS

Registration of delegates and their wives will commence at the Hotel Roosevelt at 2 p.m. on Friday, February 9. Information will be available at the desk regarding reservations at famous restaurants in the French Quarter.

On Monday, February 12, there will be a luncheon for the ladies at the Patio Royal, 417 Rue Royale, in the French Quarter. A speaker will discuss the traditions of the French Quarter.

On Tuesday, February 13, the ladies will have a walking tour of the Ante-Bellum Homes of the Garden District, under the patronage of Mrs. William P. Burke. Buses will leave the Roosevelt Hotel in the early afternoon for the McGehee School, and all of the homes to be visited are within easy walking distance of the school. At the conclusion of the tour tea will be served.

Instead of the manufacturers' reception which has been featured in the past, we are going to have a boat ride around New Orleans Harbor for the delegates and their wives on Wednesday evening, February 14. The boat will leave the docks at 8 p.m. and return at 11 p.m. Light refreshments will be available aboard the boat. We shall have a fine program of entertainment on the boat through the courtesy of the associate members; the cost of this entertainment will be financed out of regular associate membership dues. More details of this boat ride will be furnished later.

European Cement Relieves Shortage in Miami Area

Two shiploads of European cement, totaling 13,000 tons, were received in Miami, Fla., recently. In spite of a slackening of building permits, the cement was taken directly from the boats to construction sites.

One ship contained 7,500 tons of German cement, while the other held 5,500 tons from England. Two other vessels each with 6,000 tons are en route from England.

At Zanesville, O., employees of the Columbia Cement Division of the Pittsburgh Plate Glass Company returned to work after a 37-day strike after agreeing to accept a new two-year contract granting a 5-cents-an-hour wage hike.

Two German Gypsum Mills Ordered for Newfoundland

Negotiations have been concluded between Dr. A. A. Valdmanis, Newfoundland's director general of economic development, and six German industrialists for the construction of two gypsum mills on the west coast of the island at Humbermouth.

The two mills will produce powdered gypsum for plaster and dental plates and gypsum wallboard. It was stated that the cost of the construction will be approximately $2,000,000.

General view of the streamlined, automatic sand and gravel plant at Hungry Horse Dam. Finished gravel storage left, sand storage before blending, right. Concrete plant is at the upper left.

Aggregates for

By HARRY F. UTLEY

another ON THE SPOT moment

HUNGRY Horse Dam, fourth largest concrete dam in the world and currently one of the nation's major construction projects, is approaching the half-way mark toward completion as the icy fingers of the 1950-51 winter prepare to squeeze to a halt another season's work.

Located but a few miles from the western portals of Glacier National Park in northwest Montana, the dam is a key project in the U. S. Department of the Interior's long-range program for developing the water resources of the Columbia River drainage basin. The dam and power plant, currently being constructed by the Bureau of Reclamation on the South Fork of the Flathead River, will be an arch-gravity type of concrete structure. It will be 2,115 ft. long at the crest and 564 ft. high—higher than Grand Coulee and surpassed only in height by Shasta and Hoover Dams. In its construction, approximately 3,000,000 cu. yds. of concrete will be required; and a total of 5,600,000 tons of sand and gravel, excavated and processed near the dam site, will have been turned out at the completion of the work in 1953.

The prime contract for construction of the dam and power plant was awarded in April, 1948, to the General-Shea-Morrison Company on its bid of $43,431,000. This is a combination of 12 contracting firms, chief of whom are the sponsor, the General Construction Company, the Shea Company, and the Morrison-Knudsen Company, Inc.

The 700-t.p.h. sand-and-gravel plant was designed and built by the contractor and is located at the bottom of Flathead Canyon, a short distance below the dam site. The plant is, of course, a model of efficient, automatic operation, and flexible to the nth degree. Processing is concentrated in a single, five-story steel structure where four coarse and three fine sizes (including some manufactured sand) are produced. Top size of the finished material is 6 in.

WHY HUNGRY HORSE . . . ?

Thousands of Rocky Mountain tourists visit the Hungry Horse Dam site each summer and the question they most frequently ask is —"What is the origin of the name, Hungry Horse?"

Old timers in the region recall that a couple of pack horses named Tex and Jerry got lost in the winter of 1900-1901 and struggled for a month belly-deep in snow along the South Fork of the Flathead. When found they were nearly starved, practically skin and bones, and so weak that they had to be fed on oats for a few days before they could be led to civilization.

So a mountain lake, a creek, and a peak in the vicinity today bear the name "Hungry Horse"—likewise the new dam.

This modern 700-t.p.h. plant supplies sand and gravel for world's fourth largest concrete dam

Hungry Horse

• General view of construction of the Hungry Horse Dam in northern Montana. This dam, which will be the world's fourth largest of its kind, is scheduled for completion in 1953.

The sand is sampled hourly at the concrete plant and may not vary over 0.20 from the average fineness modulus of 10 test samples. The contractor is justly proud of the fact, however, that due to constant, careful control in production and blending, it has never varied more than 0.09.

The sand-and-gravel deposit, chosen jointly by the Bureau of Reclamation and the contractor after many tests, is a 110-acre site at the junction of the North and South Forks of the Flathead River, 4½ miles below the dam. A Bucyrus-Erie Model 6160 walking dragline carrying a 10-cu. yd. bucket does the excavating, digging as deep as 50 ft. and dumping into a grizzly-covered movable truck-hopper which scalps out to waste any cobbles over 15 in. Cleaning up is done with a Northwest 80D 2½-cu. yd. machine.

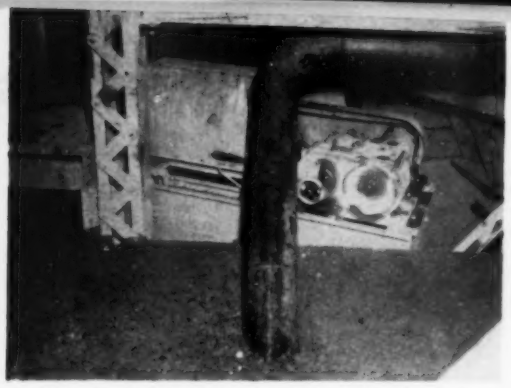
A fleet of 13 Euclid 20-cu. yd. bottom-dump wagons load at the hopper and deliver to the plant, traveling over a fine 40-ft.-wide waterbound macadam haul road built by the contractor along the river bank. The deposit runs about 23 percent sand, somewhat less than desired for good raw material balance. The natural deficiency is made up by working a dry bank of sand about 2 miles from the dam. Here an Eimco 104 Rocker Shovel mounted on crawlers digs the material and loads Euclid 15-ton dump trucks which deliver to the plant.

Upon reaching the plant, the trucks discharge into a receiving hopper, a Jeffrey 42- by 60-in. vibrating feeder and short belt conveyor carrying the pit-run to a Link-Belt 6- by 18-ft. revolving scalping screen, the 6- to 15-in. boulders coming off being split and fed directly into a pair of Cedarapids 20- by 36-in. primary jaw crushers. Screen throughs and the product of the crushers, now reduced to 6-in. top size, are carried by a 30-in. by

Any proportional variance in sizes in the pit run can be quickly corrected by the recirculating system in the processing plant; but this is seldom required except in the sand department, where the specifications laid down by the Bureau of Reclamation are unusually rigid, to wit:

Screen Size	Individual Percentage, by Weight, Retained
No. 4	0–5
No. 8	10–20
No. 16	10–20
No. 30	10–30
No. 50	15–35
No. 100	12–20
pan	3–7

• Bank sand is dug and loaded in jig time by this dual-purpose shovel.



• This 20-in. weighing device controls the supply going to the rod mill, allowing a constant rate of feed.

• Two of the eight washing and sizing screens. This pair is producing minus 1½-in. plus ¾-in. finished gravel.

• Small gravel and oversize sand is ground in this 8- by 30-ft. rod-mill to supplement the supply of natural sand.

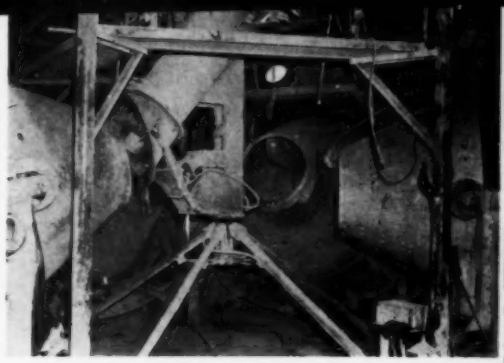
• Aggregates plant with the central processing building at the left and some of the finished material stockpiles in foreground.

350-ft. belt conveyor to a raw-aggregate surge pile. Distribution is by means of an unusual traveling stacker which builds up a straight-line pile 900 ft. long.

This stacker consists of a steel, self-propelled, A-frame gantry straddling the belt coming from the primary-crusher house. It moves ahead or backward on rails spaced 25 ft. apart and carries a 30-in. by 66-ft. stacker belt on a side boom to build up the pile. The bank sand is dumped from a ramp directly by the trucks at one end of the pile. Live-storage capacity of the surge pile is about 150,000 tons. Recovery is by a 7- by 8-ft. laminated timber tunnel below, remote-controlled vibrating feeders putting the material on the reclaiming belt which runs up to the top of the processing plant. A Merrick 30-in. Weightometer at one point on the belt records the amount of raw material which goes up for processing.

There are eight spray-equipped washing-and-sizing screens, arranged in four identical pairs, which make the finished coarse aggregates. These are all Ty-Rock double-deck units, four 5- by 10-ft. screens handling the coarsest gravels, and four 5- by 12-ft. units separating the intermediate and finer gravel. Successively, the screens take out 3- to 6-in., 1½- to 3-in., ¾- to 1½-in., and No. 4 to ¾-in. sizes, stacker belts building up piles of finished material in line over a reclaiming tunnel.

The screen arrangement is extremely flexible, however, permitting recrushing of any product if desired to balance the piles. In closed circuit with the main belt feeding the screens are a Cedarapids 10- by 36-in. secondary jaw crusher which can reduce the 3- to 6-in. material, and a Symons 3-ft. cone which can crush any of the minus



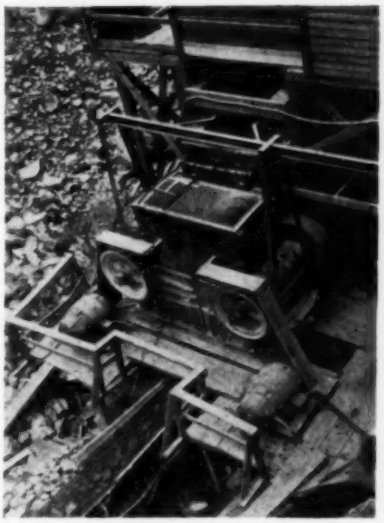
• This view shows four of the 4-cu. yd. mixers with central rotating charging hopper. A fifth mixer has since been installed in the space in the foreground.

• Just to the right of center in this picture is the 30-in. recording weigher located on the belt conveyor which leads from the reclaiming tunnel to the processing plant. It records the amount of raw material which goes up for processing.

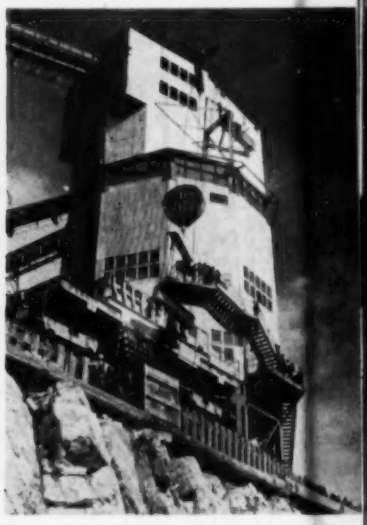
3-in. gravels. The arrangement further allows the 1½- to 3-in. gravel to return to either the jaw or the cone, permitting size balancing to a degree seldom found in an aggregate-processing operation.

Minus No. 4 throughs from the last pair of screens feed the sand department and, in about 5:1 dilution, are flumed to a Dorr 24-ft. by 6-ft. 8-in. Hydroseparator. Extreme fines (minus 150-mesh) are wasted in the overflow and some of the recovered product (minus No. 4 plus 150-mesh) is handled by a Dorr 8- by 30-ft. rake classifier, thence to storage pile above the sand-reclaiming tunnel. This product is considered a medium sand. The remainder of the Hydroseparator product passes to a Dorr Type EX 8-pocket sizer for division into fine and coarse fractions. A Ty-Rock 3- by 6-ft. single-deck screen between the Hydroseparator and the pocket sizer may optionally be used to take out plus No. 8 sand, which then goes to a rod mill. Fine sand from the sizer passes, to one Dorr 5- by 25-ft. rake classifier and coarse sand to another, the product of the two rakes being separately stored over the sand-reclaiming tunnel. The coarse material is in the 8- to 30-mesh range; the fine from 30- to 150-mesh. At times, some of the 30- to 50-mesh sand from the middle cells of the pocket sizer exceeds requirements and is bypassed to waste. The sizer does an extremely accurate job of sizing the sand, each of the eight cells making a different material. Such close control is not required, however, and the discharged material is combined in 2-cell and 3-cell batches.

As required, sand is manufactured in a Marcy 8- by 30-ft. conventional rod-mill to make up a varying deficiency in the natural product. The bulk of the make-up, however, de-



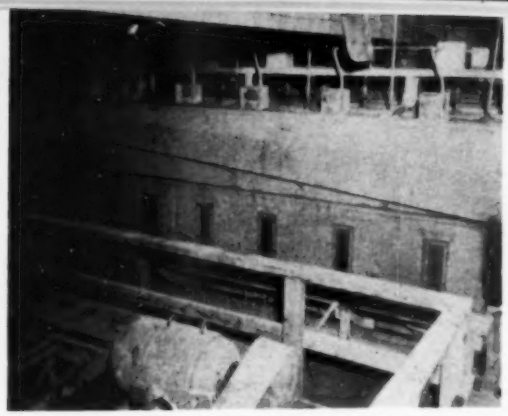
• Two 20- by 36-in. primary jaw crushers reduce all the pit-run material to minus 6-in. before it goes to the 150,000 ton surge pile.



• Filling one of the 8-cu. yd. concrete buckets in front of the 10-side concrete plant.

• This traveling stacker straddles the feed belt and can move backward or forward a distance of 800 ft. to build up windrow-like surge pile at left.

• These two 50- by 25-ft. rake classifiers handle the fine and coarse sands. The products of these two rakes are separately stored over the sand-reclaiming tunnel.



• Sand is accurately classified in this 8-pocket sizer in which hindered settling is effected by an upward current of water. It uses about 900 g.p.m. at the Hungry Horse plant.

velops while gravel is being re-crushed in the balancing cone-crusher previously mentioned, which is close-circuited with the gravel-sizing screens. Any amount of fine gravel may be by-passed to the rod-mill for grinding, along with any plus No. 8 sand rejected by the screen following the Hydroseparator previously mentioned. Control of the rod-mill feed is constant via a Merrick 20-in. Feedoweight, where it joins the other sand for later classification and dewatering.

The finished sand, now in three 14,000-ton capacity piles (one fine, one medium, one coarse) above the sand-reclaiming tunnel, is carefully blended by three Merrick 24-in. Feedoweights onto a tunnel belt which deposits the blended specification sand in a stock pile at the extreme end of the finished gravel piles. The weighing feeders permit "on-the-button" control in proportioning the blended sand and can be regulated by remote control.

The main belt conveyor from the aggregate stockpile to the concrete-mixing plant is 36 in. wide and 1,600 ft. long and operates in the tunnel beneath the gravel and blended-sand storage piles, inclining upward 400 ft. or more to the concrete plant after leaving the tunnel.

Water requirements total 5,000 g.p.m., and the supply comes by gravity through 7,000 ft. of pipe from a small dam up in the mountains. About 3,500 g.p.m. is used by the screens, while 1,500 g.p.m. is required in the sand-processing department. U. S. Rubber Co. belting and Link-Belt rolls and idlers were used in assembling the conveyors.

The C. S. Johnson 10-sided concrete-mixing plant has a pair of Ty-Rock 5- by 14-ft. double-deck screens set above the 5-compartment 1,800-cu. yd. bin, where all the gravel is re-screened, in accordance with Bureau of Reclamation specifications, before it is binned. The sand, by-passes the screens and goes directly to its own bin compartment.

Batching is completely automatic, with all controls and recorder instruments set for operation by one mixer operator. Five 4-cu. yd. Koehring mixers are arranged in a circle to permit charging them from the front by a central rotating hopper and spout. All five mixers discharge into a common conical hopper directly above the transfer tracks. The Crowe 8-cu. yd. bottom-dump concrete buckets are handled by four cableways.

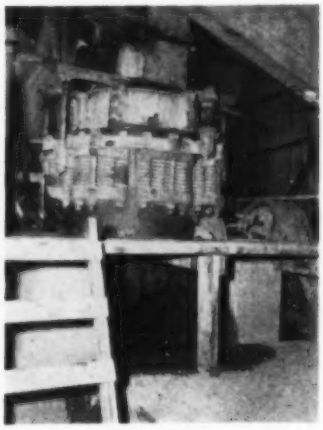
Mass concrete in the dam is to be force-cooled by conventional 1-in. piping embedded in the concrete, while the potential heat generated in the concrete itself is initially reduced by substituting pozzolanic material for some of the cement. Fly ash, a by product of steam-generating plants in far-off Chicago, is the pozzolan in use at Hungry Horse, the material arriving in covered hopper cars similar to those that bring in the cement. About 90 lbs. of fly ash is used per cubic yard of concrete. An admixture, Autolene Lubricants Company's Protex, is also used to entrain air. Cement and fly ash are received at the town of Coram, nearest railroad point, and are trucked to the dam.

Operating under lights on a 24-hr. daily schedule, concrete placement was averaging 5,625 cu. yds. per day when the project was visited about August 1, 1950. The best day's placement of record was 6,325 cu. yds., which was just about the practical capacity of the concrete plant, although theoretically it can prepare 400 cu. yds. per hr.

For the Bureau of Reclamation, Clyde H. Spencer is construction engineer in charge of the project. Davis S. Culver is his assistant. C. W. (Smoky) Wood is project manager for General-Shea-Morrison Co. R. W. (Dick) Jones, who designed and built the aggregate plant, is chief engineer.

• This is the 10-cu. yd. walking dragline filling the truck-loading hopper at the pit. (see cover picture).

• Cone crusher used for balancing supply of sized material and incidental production of some manufactured sand.



THE OREGON PUMICE INDUSTRY

• The Lloyd A. Williamson pumice processing plant north of Bend, Ore. A loaded car is ready for shipment on the rail spur at the left.

THE production of pumice lightweight aggregates in Oregon is strictly a post-war development. There was no commercial output prior to 1945. In 1946 six operators were engaged in small-scale production; in 1947, as many as 12 con-

By HARRY F. UTLEY

cerns were reportedly excavating and shipping the material. By 1949, however, the number of established operations had dwindled to seven and, in 1950, only four plants remained in commercial production.

As the number of plants declined, annual output of pumice aggregates has continued to increase. Production in 1946 totaled only about 26,000 cu. yds., whereas in 1950, the annual output had risen to nearly 200,000 cu. yds., valued at about $300,000.

A complete range of accurately-sized or blended aggregates is now available, with the concrete-block industry accounting for the bulk of the shipments. This is in marked contrast to conditions of a few years back, when only pit-run pumice was produced, little or no attention being given to controlling quality or gradation.

At present the industry is centered in and around Bend, in the south central part of the state. Three concerns are in large-scale production in that vicinity—Lloyd A. Williamson, Central Oregon Pumice Company, and Pumice Engineering Company. Some distance south of Bend, at Chemult, Chrystallite Aggregates is reported to have operated spasmodically during 1950, while at least two concrete-block concerns, Deschutes Concrete Products Company at Redmond, and the Harney Concrete Tile Company at Burns, produce for their own needs only.

More than half of Oregon's entire output of sized and blended pumice aggregates is currently coming from the pits and plant of Lloyd A. Williamson at Bend. Mr. Williamson is the pioneer producer in the state and now owns or controls more than 1,800 acres of the highest-grade deposits. Shipments from the Williamson plant go as far south as San Jose, Calif., and northward into Canada. Besides shipping to scores of concrete-products plants, most of them in Washington and Oregon, Mr. Williamson has been instrumental in selling architects and engineers on the merits of pumice aggregates for various structural uses. Precast panels for tilt-up construction, insulating roof slabs, and Q-deck floors are among the uses for which he has successfully promoted pumice aggregates.

At the Williamson pits an Insley shovel with a 5/8-cu. yd. bucket digs and loads the material, dump trucks hauling to the plant north of Bend. Common practice has been to excavate with tractors and bulldozers, but Mr. Williamson believes that the vertical shovel cuts across the horizontal bedding and furnishes a more uniform plant feed, with less fractured and shattered material. For the most part, the desirable pumice is overlain by vol-

• The Central Oregon Pumice Company operates this plant at Bend.

• The plant of the Pumice Engineering Company at Bend.

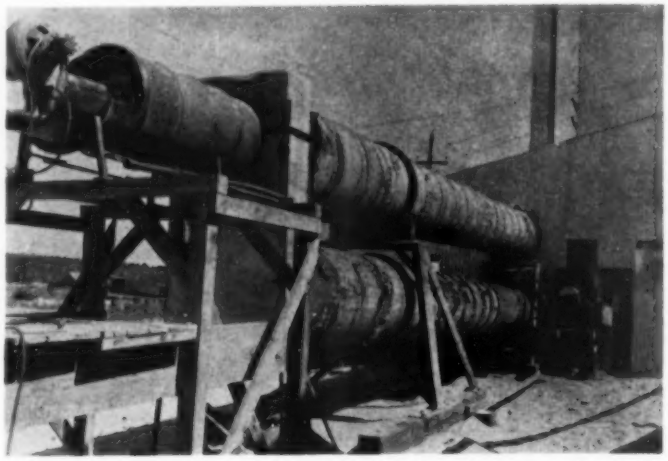
• This view shows in a striking manner the division between the volcanic ash above and pumice below. The ash is wasted at present, but studies by the Oregon State College indicate it has excellent pozzolanic properties.

canic ash, which is stripped and wasted. The ash is known to have excellent pozzolanic properties, however, and a study recently undertaken by Oregon State College indicates that there should be an excellent market for the material as an ingredient in concrete. Preliminary results of the study have shown that the ash, used just as it comes from the deposit, can replace up to 30 percent of the cement in mass concrete with no loss of strength, at the same time lowering the heat of hydration.

Sizing at the Williamson plant is done by a vibrating screen with a roll crusher in closed circuit, the process normally separating out three sizes of material, 3/8- to 3/16-in.; 3/32- to 3/16-in. and minus 3/32-in. Individual sizes are either stored in bins at the plant or loaded directly into railroad cars by a belt conveyor. Much of the product is blended during the loading operations, however, to suit the demands of the purchasers. For monolithic concrete work the pumice is often upgraded to 3/4-in. maximum size.

A good deal of the 3/32-in. fine material taken out by the screen at the Williamson plant is kiln dried and sold as plaster sand. A two-stage oil-fired rotary dryer handles this output, the finished product being packed in 4-cu. ft. paper bags under the "Cascade" brand name. The dried product, in the 10- to 14-mesh range, conforms to A.S.T.M. specifications for plaster sand. It weighs about 28 lbs. per cu. ft. A typical analysis of the dried pumice, made by Northwest Testing Laboratories, Portland, is as follows:

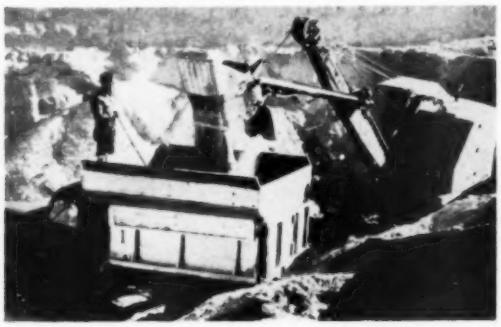
(Continued on page 142)



• Pumice plastering sand is dried in this two-stage drier at the Williamson plant.

• Below: Lloyd A. Williamson in one of the pits he operates near Bend. Closeup view gives a good idea of the size and occurrence of the pumice.

• Below: A shovel loading truck in the Williamson pit. Trucks carry from 10 to 13 cu. yds. The bucket shown was rebuilt from a ⅜ cu. yd. standard model by the addition of the special lip shown, which increases the capacity to ⅝ cu. yd.



Review and Forecast

A special section summarizing conditions in the Pit and Quarry Industries

Construction page 92

Cement page 102

Aggregates page 113

Other Non-Metals page 117

FOR many years it has been our custom to publish in January the annual Review and Forecast Number of PIT AND QUARRY, of which this is the 35th. In this issue we present reviews of the developments in the various nonmetallic minerals industries during the last year and prospects for the year ahead. For this issue we have made a greater effort than ever before to assemble the most up-to-date and complete information possible. We have sent out hundreds of questionnaires, and these brought a gratifyingly high percentage of replies in all industries and from all parts of the country. We have also gathered the latest and most complete information available from governmental bureaus, our own files and many other sources. Complete and official reports on 1950 production, shipments, prices, etc., will not be available for any of these industries for several months; but we believe that, with the cooperation of the industry, we have enough information to enable us to present a fairly accurate picture of conditions in 1950 and a reasonably good estimate of prospects for 1951.

REVIEW It is apparent that the nonmetallic minerals industries in the pit and quarry field, which includes all those except coal, oil, and building clays, collectively had the biggest year in their history in 1950, some of them setting all-time records. This achievement is all the more notable because of the many handicaps to production, which included strikes within the industries, a prolonged reduction of coal output, car shortages, etc. In general those materials going primarily into construction fared best because of the building boom which developed during the year. The portland cement industry reached new peaks for the fourth consecutive year in production, shipments, and value of shipments. The price per barrel also reached the highest level since the early days of the industry, although still lagging far behind all other building materials. Production increased about 6.7 percent to about 224,000,000 bbls. Shipments were about 227,000,000 bbls., about 10.2 percent ahead of 1949. Total mill value was probably about 13 percent over 1950 for a new record of about $534,000,000.

The available information on aggregates production in 1950 is less complete but there is enough to indicate that new production and value records were achieved. The sand-and-gravel industry apparently produced about 345,000,000 tons in 1950, about 8 percent over the previous year's all-time high. These figures include both commercial and non-commercial production. The total production of crushed stone (including both commercial and non-commercial but excluding that used in cement and lime manufacture) totaled about 234,000,000 tons, up about 5 percent from 1949. Moderate but general price increases brought the values of both sand-and-gravel and crushed stone production up to about $375,000,000 and $305,000,000, respectively.

Little information is available on the production of slag and chats and of perlite and other lightweight aggregates in 1950, but their collective output must have increased considerably. Slag production was probably up over the relatively poor showing in 1949 caused by the steel strikes. The production of lightweight aggregates, individually and collectively, probably soared to new heights, due in large part to the greatly increased usage of these materials by the concrete masonry units industry.

Most of the other nonmetallic minerals in this field, nearly all of them industrial minerals, in 1950 showed increases over 1949 but were below the 1948 levels, many of which were all-time records. Open-market lime production is estimated to have reached a new high of about 8,000,000 tons. Gypsum mine production, after a sharp drop in 1949, soared to about 7,000,000 tons, possibly exceeding the 7,044,447-ton record set in 1948. The production of phosphate rock was also undoubtedly at a new record level after a drop in 1949. Sulphur production reached a new peak. No 1950 data are available on the many other nonmetallic minerals industries; collectively they probably produced more than in 1949 but in some cases less than in 1948, which was an all-time record year for many of them.

FORECAST Before the Korean situation really became serious, it seemed that the 1950 inflationary boom would carry over into 1951 and probably make it another record year for the pit and quarry field, among others. The present world situation, however, has caused a drastic revision of earlier estimates, and it now looks as if 1951 will be a good but not a record year. Additional unfavorable world developments might bring back conditions similar to those late in World War II, when the production of those materials going into construction dropped to the lowest levels in many years. Such developments would, of course, create record demands for those industrial minerals used for war production, but the net result would be far below peak levels for all these industries combined.—The Editors.

1950 Dollar Volume Set Record

Residential boom accounted for increase; costs, curbs, will decrease '51 activity.

By E. R. JENNINGS JR.

THE year 1950 produced a tremendous all-time high in dollar volume in construction throughout the nation. But that old bugabook, the inflation spiral, after flattening out in 1949, began climbing again early in 1950, causing construction costs also to reach an all-time high late in the year. Labor and material costs are now almost three times what they were in 1939, with the result that 1950 was not a peak year as far as the actual physical volume of construction was concerned (see graph).

During 1950 the country spent a total of about $34,000,000,000 on construction of all types, which includes $7,500,000,000 on maintenance and repair. This total dollar volume of construction can be broken down percentagewise as follows: private residential—32 percent of the total; maintenance and modernization—25 percent; federal, state, and municipal—20 percent; private non-residential—11 percent; public utility—9 percent; and farm —3 percent. This dollar volume represented 15 percent of the national income, a percentage that was less than the proportions spent during the twenties and the late thirties, but the highest since 1940.

The overall outlook in 1951 is for a drop of some 17 percent from the 1950 all-time high dollar volume. Total 1951 new construction outlays should be in the vicinity of $22,000,000,000, with most of the decline caused by the sharp expected drop in residential building due to credit curbs, wage controls, etc. Modernization and repair outlays are expected to exceed the 1950 total. This year will be a good year for the construction industry, by normal standards and, therefore, good for the non-metallic minerals industries.

The staff of PIT AND QUARRY magazine extends its acknowledgement and thanks to the following organizations for supplying much of the data necessary in the preparation of this review and forecast: Standard and Poor's Corporation; The American Appraisal Company; F. W. Dodge Corporation; U. S. Department of Commerce; U. S. Department of Labor; U. S. Department of the Interior; and all the state and municipal highway departments whose replies to our questionnaire are reprinted on succeeding pages.

• Pictured here is the Augusta bridge, an outstanding project in the state of Maine during 1950, completed at a cost of around $3,100,000.

Distributors of building materials can be expected to follow cautious buying policies. However, it is logical to assume that inventories of materials have declined as a result of the 1950 boom, and an expected replenishment of building materials stocks will help to cushion the decline in manufacturers' sales. The cement industry is in the best position to maintain sales at the 1950 peak, at least during the first half of the year, with the amount of decline in the other materials industries dependent on the extent to which output can be channeled into construction fields other than residential, where the major drop in materials will occur.

Housing The biggest factor in this 1950 dollar boom was the increase in private residential construction early in the year resulting from a number of sociological and economic conditions. The most important of these were the following: the decline in the number of families doubling up on accommodations; the increase in population and the subsequent increase in new families; the restrictions during the last war on non-essential construction; the tremendous buying power of the public resulting from both increased income and employment; the easy credit conditions prevailing last spring; and the predominating free-spending mood of the public in general. As a result, approximately 1,300,000 new non-farm dwelling units were started during 1950.

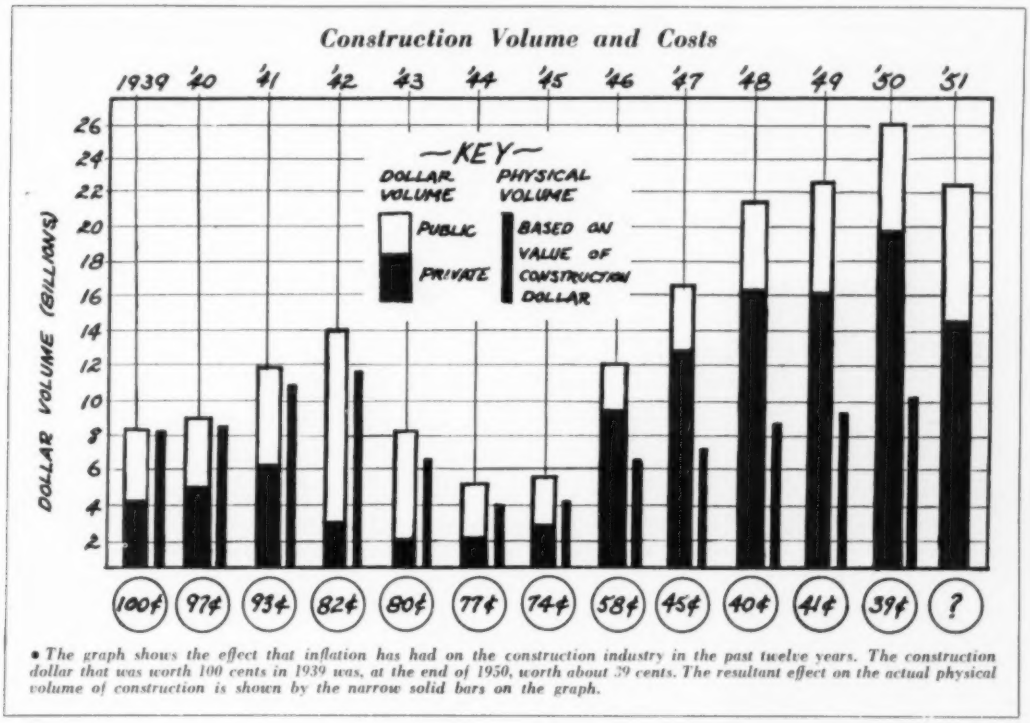
It is difficult to say whether or not this residential boom would have continued on into 1951 if the government had not clamped down on home mortgage credit early in the fall of 1950. At any rate the controls have been put on, and the con-

struction industry must face a sharp drop in the market for housing, even though the need for increased housing is still present. Under Regulation X, issued in October, 1950, by the Federal Reserve, and other related regulatory measures, mortgage credit was considerably tightened, with the intention of making the 1951 housing volume about 1/3 less than in 1950. These measures have the two-fold purpose of curbing inflation in the housing market and of conserving critical materials for defense purposes. It is obvious that these credit restrictions will cause a decline in new housing starts, but to what extent depends on many things. Men in the construction industry seem to feel that these credit curbs will effect a severe 50 to 60 percent overall reduction in housing volume this year, as compared with 1950. The extremely fluid world picture, in its present unpredictable state, may have even more far reaching effects on the whole picture than it has had to date. If wage controls are put into effect and personal income taxes are increased, as they well might be, there will be a definite lid on the buying power of the majority of the populace.

However, even allowing for the decline which will occur in 1951, and barring an all-out war, the overall indications are that private residential building will go forward on its own momentum, and at least will not be subjected to a complete shutdown as in World War II. Private building should participate in a fair share of the civilian work permitted during 1951. An annual building rate of around 700,000 units, although well below the 1950 total, probably will not be great enough to interfere with the planned defense effort. The chances are that 1951 will prove to be a fairly good year in private building when measured by any ordinary standard, with much depending on what happens during the very near future in the realm of world politics.

To date, those who have ventured into the prefabricated and mass production housing field have not accounted for any sizeable percentage of residential construction. However, the methods that these producers have employed, resulting in greater efficiency, should have some effect in the future on the construction industry. Perhaps the increased efficiency resulting from such methods will permit lower costs to the consumer in housing production.

Non-residential This category of the construction field includes commercial, industrial, institutional, educational, recreational, and public building. Accounting for 11 percent of the 1950 total dollar volume, this field will probably not experience too great a change during 1951. Tight controls have been put on some types, such as recreational, but there is a considerable increase in activity expected in the industrial phase due to the rearmament program, which will serve to take up the slack and perhaps even provide an overall increase. Industrial construction is, of course, directly related to the volume of business activity. The year 1951 will probably be one of partial conversion to arms production, with a cutback in the production of goods for civilian consumption. As a result there will probably be a need for increased productive capacity, pointing to some increase in related construction activity. It must be remembered, however, that during and since the last war a great number of new plants were built, and enlargements of existing facilities on a large scale, so that the activity in this field will probably not be anything like the 1942-43 period. Here again, the amount of construction will depend a great deal on just what the government decides to do in the way of arms production. Some increase can be counted on,



• The graph shows the effect that inflation has had on the construction industry in the past twelve years. The construction dollar that was worth 100 cents in 1939 was, at the end of 1950, worth about 39 cents. The resultant effect on the actual physical volume of construction is shown by the narrow solid bars on the graph.

• The Cabrillo Freeway in California, (U. S. Highway 395), through Balboa Park showing the Laurel Street overcrossing in the city of San Diego.

depending upon what use is made of existing facilities. Industrial building construction fell below average during 1949, but revived during 1950; it should be on the upswing in 1951.

In the educational and institutional fields, construction activity has been at a high level since the end of World War II, particularly due to the great increase in demand for educational facilities. In 1950 private expenditures for school constructions totaled $295,000,000 and public expenditures ran to $1,125,000,000. Barring any radical change in conditions, it is expected that 1951 will see a 10 percent increase in private and a 15 percent increase in public expenditures for this kind of building.

In 1951 this non-residential classification should show a 4 percent drop in private construction and an 11 to 12 percent increase in public construction, for an overall 7 to 8 percent increase. In the private non-residential field the following fact should be noted: The "carryover" of work from 1950 to 1951 on industrial and commercial buildings is expected to be quite large as a result of the high volume of contracts awarded during the last months of 1950, after the start of the Korean War. It is felt by some industry groups that this recent large contract volume was in anticipation of possible government controls and does not represent a definite trend which will continue in 1951. Thus the estimates of the increase in value of work to be placed in 1951 is a result of this carryover, and not of anticipated contract awards. This is undoubtedly true of commercial construction. However, the contract awards for industrial construction will be directly related, as stated before, to the volume of war materials which American industry will be called on to produce.

• The first section of the Atlanta, Georgia, Expressway looking south toward the business section.

Public Utilities Accounting for some 9 percent of the dollar volume in 1950, this category includes electric power facilities, water supply systems, oil pipe lines, railroad construction, airports, military facilities, and the like. The high level of business activity, the increase in the use of electric utilities, and other related factors have in the last few years placed a heavy demand on the nation's power-supply facilities. As a result, the prospects for the future expansion of electric power capacity are quite promising, with replacement and modernization of older facilities providing a heavy backlog of demand. This demand will undoubtedly increase in the near future if the nation is to revert to full-scale war production. The need for adequate power facilities in a nation preparing for a possible war is obvious.

The Bureau of Reclamation has announced that facilities for the distribution of water and electric power will be given "major attention" during 1951. Although the Bureau is famous for its big dam projects, most of the eight dams listed in this fiscal year's new starts are relatively small, designed for river regulation or diversion. The larger activities and expenditures will be for canal and electric transmission line construction in the Western states.

Important as these fields are to national defense, the consensus of opinion is that there will be a cutback in expenditure for such projects due to the economies made necessary by the defense program.

However, increases in the construction of military, naval, and aviation facilities may be in sufficient volume to make up the decline in the other phases.

Pennsylvania and New Jersey Turnpikes The 100-mile eastern extension of the Pennsylvania Turnpike has now been completed. The 67-mile western extension to the Ohio line is scheduled for completion late in 1951. The extension program is financed by revenue bonds through an investment banking group. The cost of the eastern extension is $86,400,000; the western, $78,300,000. The eastern extension required 57,200 cu. yds. of Class "A" concrete, 137,500 cu. yds. of Class "B" concrete, 4,870,000 sq. yds. of special sub-grade, and 2,830,000 sq. yds. of concrete pavement.

According to the New Jersey Turnpike Authority, total construction and other costs through September 30 amounted to $34,093,000. All basic construction contracts, exclusive of paving and three structures, had been awarded at that date. All but six of the 118 required miles of right of way have been procured. At the end of June contract costs were running about $3,500,000 less than original estimates; but by the end of September costs had jumped to $8,556,646 in excess of estimates.

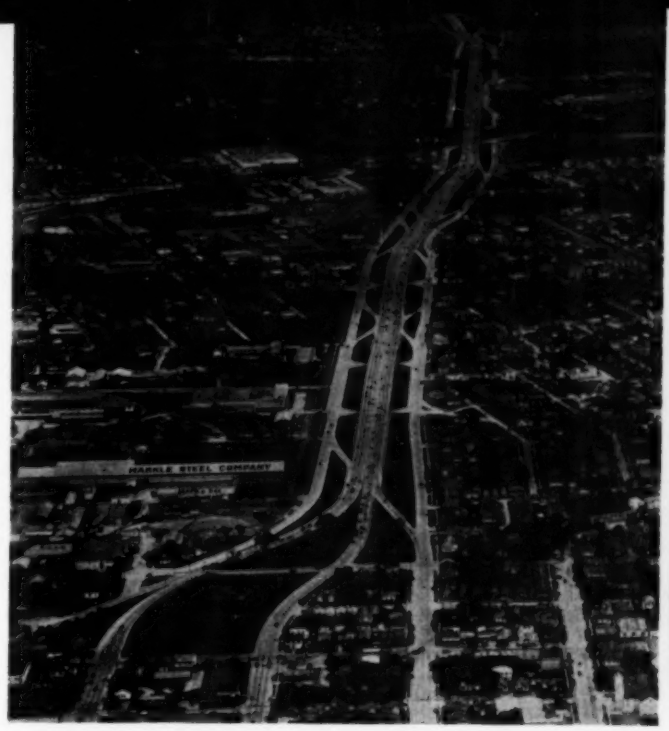
Public Works The bulk of the activities in this division (bridges, highways, etc.) is carried out by the various governmental levels, and from its nature is less subject to sharp fluctuations than other types of construction. Municipal expenditures for construction such as sewers, playgrounds, street paving, etc., are closely tied in with the volume of residential building and as a result of the expected 1951 drop in this field, will probably also decline somewhat. Federal and state projects, embracing highways, bridges, etc., are based on long-term needs. During 1950 the Bureau of Public Roads states that the following amounts were spent on highway work:

Estimated capital outlay—1950	
By state highway departments	$1,528,000,000
By toll authorities	128,000,000
By counties and local rural units	275,000,000

By municipalities	230,000,000
By federal agencies (Park & Forest Roads)	37,000,000
Total	$2,198,000,000
Estimated maintenance expenditures—1951	
By state highway departments	510,000,000
By toll authorities	10,000,000
By counties and local rural units	510,000,000
By municipalities	350,000,000
Total	$1,380,000,000

As for 1951, it is obvious that an efficiently functioning highway transportation system is extremely vital to national security. As a result, it is widely felt that highway construction and maintenance will be given top consideration in the present national emergency. The outlook is for an increase in the dollar volume in this type of construction for 1951 of from 5 to 8 percent.

Referring to the replies which PIT AND QUARRY received to a questionnaire sent to all state highway departments, and the larger municipalities, it is apparent that three factors hindered their construction programs in 1950 and can be expected to have similar effects in 1951. These factors are shortage of funds to match available Federal Aid, shortages of materials (particularly cement and steel) and lack of technical personnel. The shortage of funds has not only made it quite difficult for many states to compete with private enterprise for engineers and similar professional people, but has also restricted the extent of their programs. The cement and steel shortages were relatively mild in most areas, but quite severe in some. Reference to the replies from the individual states will provide more complete explanations of these factors.



● Aerial view of the Gulf Freeway, Houston, Texas, (U. S. 75), looking south from the end of the 4-street system toward south city limits.

State and Municipal Highway Construction

ARIZONA—We built 85 miles of primary roads in 1950, 81 miles of secondary roads, and 45 miles of county F.A.S. roads. Dollar cost of these was as follows: F.A.P., $9,000,000; state F.A.S., $1,000,000; county F.A.S., $1,000,000. In 1951 we plan to do about the same amount of work as in 1950.

We ran into no shortages of labor or materials in 1950.

W. C. Lefebvre,
State Highway Engineer

ARKANSAS—Contracts let and state force authorizations in 1950 total in money value $10,751,284 for primary and $8,031,422 for secondary roads. Some of this work will be carried over into 1951. We have not separated or tabulated total mileage involved in these projects, due to overlapping of contracts. The commission has not yet formed the 1951 construction program.

Some delays were encountered in 1950 because of cement shortage and slow delivery of steel.

A. E. Johnson, Chief Engineer

BUFFALO, N.Y.—Following is the information regarding street construction in this city during the year 1950:

	Cost
Street construction—10 streets —110,287 sq. yds.....	$1,519,033
Resurfacing 13 streets—156,098 sq. yds.....	385,412

Cement workers were on strike from June 10 to July 25, 1950.

Our paving program for the year 1951 has not yet been completed.

Karl S. Masters,
Acting Commissioner of Public Works

CALIFORNIA — During the 1949-50 fiscal year the Division of Highways placed under contract projects providing for the construction of 847 miles of all types of highways at a cost for construction, not including right of way, of $72,800,000. Projects on the state highway system totalled 733 miles in length and $67,000,000 in cost. Projects on county roads, constructed under the Federal Aid secondary program, totalled 114 miles in length and $5,800,000 in cost.

Since July 1, 1950, the Division of Highways has placed under way projects providing for the construction of 254 miles of all types of highways at an estimated cost for construction, not including right of way, of $36,500,000. Projects on the state highway system totalled 174 miles in length and $32,900,000 in cost. Projects on county roads, constructed under the Federal Aid secondary program totalled 80 miles in length and $3,600,000 in cost.

On the state highway system there remain in the 1950-51 state highway budget projects totalling 89 miles in length and $38,000,000 in cost. The 1951-52 state highway budget contains projects totalling 471 miles in length and $77,809,000 in cost. All budgeted state highway projects that will be placed under construction between the present time and June 30, 1952, total 560 miles in length and $115,809,000 in cost, not including right of way.

Programmed Federal Aid secondary projects on county roads that have not yet been placed underway total 204 miles in length and $8,208,000 in cost.

The two factors that have hindered progress of the highway program in California in 1950 to the greatest extent have been rising costs and shortage of engineering personnel.

California's highway construction program is now being slowed down by the inflationary forces that have caused highway costs to rise 18 percent in the last six months. Any restrictions on the use of already decreasing supply of materials and manpower, in addition to rising costs, will seriously cripple the highway program.

G. T. McCoy,
State Highway Engineer

CHICAGO—During 1950 the Chicago Department of Subways and Superhighways started contracts on subway and superhighway construction amounting to a dollar total of $1,760,674. Of this total $580,609 was for subway work and $1,180,064 for superhighway work.

The department's program for 1951 embraces a total dollar expenditure of $8,000,000 of which $6,000,000 would be for superhighway construction and $2,000,000 for subway work.

During 1950 we felt a shortage in labor, cement, and steel, but it hindered our construction only to a minor extent.

Future construction would undoubtedly be affected should a new world war develop. Controls on vital materials like steel and cement would naturally be tightened, since they would be considered critical materials. Should highways, however, be considered of major strategic importance, it is quite possible that materals for their construction and maintenance might be given high priority.

V. E. Gunlock,
Commissioner of Subways and Superhighways

CONNECTICUT — Approximately 25 miles of state highways were built during the construction season of 1950 at an estimated value of $14,350,000.

It is estimated that next year's program will provide an additional 25 miles of construction on the state system with an estimated dollar value of $20,000,000.

The principal hindrance to our road building efforts came through lack of funds caused by a budgetary reduction.

It is difficult to estimate the effect of world conditions at this time. In any event, the reaction of the 1951 session of the Connecticut General Assembly to conditions prevailing at that time will determine largely what our program will be for the next two years.

G. Albert Hill,
State Highway Commissioner

GEORGIA—Contracts were awarded by the State Highway Department of Georgia during the calendar year 1950 (month of December estimated) for the construction of roads and bridges as follows:

	Mileage	Cost
Roads on the state highway system	918.9	$20,579,500.00
County roads	538.1	5,018,300.00
Total awarded in 1950	1,457	$25,597,800.00

It is estimated that the following amounts will be available for awarding highway contracts during the calendar year 1951:

	Mileage	Cost
Roads on the state highway system	1,020	$23,000,000.00
County roads	750	7,000,000.00
Total estimated amounts for 1951	1,700	$30,000,000.00

The highway construction program in Georgia in 1950 has not been hindered by any shortages in materials or labor. The lack of technical engineering personnel to make surveys and plans and supervise the construction has been the principal factor which might have tended to reduce the volume of highway work placed under contract.

Roy A. Flynt,
State Highway Planning Engineer

KANSAS—In 1950 we put under contract $23,592,501 of highway construction on the state highway system and the approved Federal Aid secondary system amounting to 2,663.584 miles. In addition to this, $1,961,474 was contracted for resurfacing our highways, covering 2,274 miles. This consisted of bituminous sealing and aggregate resurfacing. For the year 1951, we estimate that we will have a program very similar to this past year's work in the way of road mileage and dollar expenditure if we do not have an all-out war.

The following tables show construction contracts approved from January 1, 1950, to the present time that constitute our program for 1950, giving the construction type, miles, and cost.

Construction Type	Mileage	Amount
Standard grade and drained	422.253	$ 6,070,939
Gravel and stone	1,421.828	2,154,266
Bituminous reconstruction	254.396	1,048,635
Bituminous surface treated	307.969	908,361
Base course and bituminous surface treated	66.620	1,198,408
Bituminous mixed surface	35.126	252,387
Base course and bituminous mixed surface	18.597	374,573
Asphalt pavement (hot mix)	77.117	2,359,097
Concrete pavement	50.476	3,500,664
Grading and concrete pavement	9.202	1,630,286
Roadside improvement		209,487
Railroad crossing signals		183,345
Scale house and scales		88,180
Total road	2,663.584	$19,978,628
Bridges (number)	125	3,586,804
Bank protection		27,069
Total structures	125 (No.)	$ 3,613,873
Grand total contracted		$23,592,501
Maintenance resurfacing	2,274.518	$ 1,961,474

During the past year our postwar highway construction has been carried to the utmost extent, using all funds and manpower available. Delaying construction in the hope of lower prices "next year" would have resulted in extra costs in most cases and would have delayed the needed improvements.

Costs on most types of construction have continued to increase

• The Route 25A Stickel Memorial Bridge connecting Newark and Harrison, New Jersey.

somewhat, although a slight downward trend had started this past spring. The threat of war and increase in defense appropriations quickly stopped this downward trend, and indications are that costs of all types of construction will start upward again. Labor, materials, and equipment have been more readily available this past year than at any time in the post-war period, but indications are that this condition will not continue.

R. C. Keeling,
State Highway Engineer

KENTUCKY—In the calendar year 1950, the following contracts were executed:

Miles of rural secondary roads	905
Miles of roads other than rural secondary	1.595
Estimated cost (per mile) for rural secondary roads	$10,000
Estimated cost (per mile) for roads other than rural secondary	$40,000

It is now planned to build in 1951, 220 miles of primary, secondary, and urban roads, at a cost of $13,909,106 from federal funds. Plans for state construction will not be available until after the first of the year.

Shortages of cement and steel, both structural and reinforcing, have been the chief hindrances to Kentucky's road-building efforts, particularly the shortage of structural steel.

While the grave world situation will certainly have a most adverse effect on construction plans, we feel that construction on primary routes during a possible future war will not be as curtailed as it was during the last war. For military expediency it will be important to keep our main highways in good condition.

D. H. Bray,
State Highway Engineer

LOS ANGELES—Based on figures for the 10-month period up to November 1, 1950, it is estimated that the construction of public improvements begun during 1950 in the City of Los Angeles will amount to approximately $22,000,000. These projects include street improvements, storm drains, sanitary sewers, and various bridges and structures designed by the Bureau of Engineering and built under city contracts, as well as similar improvements built under permit and inspected by the city as a prerequisite to their subsequent acceptance as public improvements. In addition, construction was started on certain other projects not included in the above total, which were built in the City of Los Angeles but for which the contracts were awarded by the State of California. The total of such state contracted projects begun during 1950 is estimated at $6,471,800.

During 1950 the progress of public improvement construction has not been hindered by shortages in the avialable supply of either labor or materials.

During the 1949-50 fiscal year public improvements on which construction was completed, and which were accepted by the City of Los Angeles, amounted to approximately $29,400,000. During this same period additional projects, built in Los Angeles under state contracts, amounted to slightly over $3,000,000. Preliminary estimates, based on current trends, indicate that the value of public improvement which will be completed during 1951 may amount to from $25,000,000 to $30,000,000.

Estimated figures for 1951 are approximate only and are subject to wide variation in view of the critical international situation.

Lloyd Aldrich,
City Engineer

• A view of the Central Expressway in Dallas, Texas. Extensions of this expressway are rapidly being pushed to completion.

MAINE—During the calendar year of 1950 there was construeted, on the primary system in this state, 23.577 miles, approximately 15 miles of this being bituminous macadam, approximately 5 miles bituminous concrete, and something in excess of 3 miles of bituminous gravel. The total dollar cost for construction of the primary system was $1,730,405.

On the secondary system 53.846 miles were constructed, consisting of an approximate 16 miles bituminous concrete, slightly less than a mile of bituminous macadam, 32 miles of bituminous gravel, and about 5 miles of bituminous surface-treated. The total dollar cost of the secondary system construction was $2,055,164.

The Augusta bridge (see picture), is, to us, an outstanding project for 1950. The bridge and its approaches involved an expenditure of approximately $3,100,000.

Lucius D. Barrows,
Chief Engineer

MICHIGAN—In regard to the primary roads constructed in this state during 1950, there was a total of 324 miles completed at a cost of approximately $23,000,000. There were, also, 447.6 miles of secondary roads constructed at a cost of $3,363,000. The total miles of primary roads constructed was reduced somewhat due to the fact that a substantial portion of our construction funds were allocated to expressway

construction in the City of Detroit which involved the construction of a number of expensive grade separations. As near as we can determine at the present time, our highway construction funds for primary roads for 1951 will run somewhere around $30,000,000 for a total program of 425 miles of various types of surfacing. The secondary program for 1951 is estimated to run $4,400,000 for a total of 460 miles.

There were two principal factors that considerably affected and reduced the amount of roads completed in this state during the present season, very bad weather conditions throughout the season and the extreme shortage of cement. Our concrete paving program was reduced to approximately 50 percent on account of the cement shortage. Just what effect the war situation will have on the construction industry next year is very uncertain. At the present time we are going forward with our plans for a normal program, making a special effort to place the work under contract early next year to allow contractors to place orders for cement and steel and other critical materials.

Scott A. Baker,
Assistant to the Deputy
Commissioner-Chief Engineer

MINNESOTA—In 1950, 681.5 miles of primary roads were built and 605 miles of secondary roads. The expenditure for primary road construction was $19,721,000 and for secondary road construction, $6,809,000.

It is expected that our 1951 program will involve the construction of approximately 800 miles of primary roads at an estimated cost of $20,000,000 and 473 miles of secondary roads at an an estimated cost of $8,000,000.

In addition to the above the highway department awarded, during 1950, contracts for 1081 miles of Federal Aid secondary roads off the trunk highway system, involving a total cost of $6,120,000. It is probable that this program will be approximately the same in 1951.

Road building efforts in 1950 were not seriously hindered in any respect. A few small paving and curb and gutter projects had difficulty in obtaining cement, but this did not affect our construction program to any material degree.

We are going ahead with our plans for 1951 construction without any reduction because of the uncertain world situation. If restrictions become necessary, adjustments will be made as conditions require.

O. L. Kipp,
Chief Engineer

MISSOURI—In the current fiscal year, July 1, 1950, to June 30, 1951, we have a construction program of $17,800,000 planned. This represents work on all types of construction, that is, our major system, our supplementary (farm-to-market) system, and urban highways. It is thus divided: $9,000,000, primary system; $4,000,000, secondary; and $4,000,000, urban, with the balance of $800,000 being on projects upon which we would not be able to get Federal Aid and would have to be paid from state funds only. This type of work could be on any one of the three systems.

As far as the 1951 answer is concerned, we have a tentative budgetary setup of $16,000,000 on all types of construction. Of course, this will not be officially approved until some time next May or June for the following fiscal year. It would be divided in approximately the same categories and on about the same percentages.

G. M. Threlkeld,
Director of Information

MONTANA—Construction was completed on 260 miles of roadway and bridges on the primary system during the period from January 1, 1950, to October 31, 1950, at a total cost of $5,940,375.00. During the same period construction was completed on 211 miles of secondary roadway and bridges at a cost of $2,195,040.00.

Assuming that sufficient state funds will be made available to match Federal Aid, it is estimated that $10,000,000 will be spent on construction during 1951 and that $6,000,000 will be expended for maintenance.

So far, we have not been affected by a shortage of labor or materials.

Morris Griffith,
Office Engineer

NEBRASKA—Between January 1, 1950, and October 5, 1950, the Nebraska Department of Roads and Irrigation awarded contracts amounting to $11,086,717.20, for highway construction. This work included detours, grading, culverts, structures within the limits of projects, projects for structures alone, new gravel surfacing, new bituminous surfacing, new concrete surfacing, resurfacing and widening existing bituminous and concrete highways, guard rails, and river bank protection. This work was done on more than 350 miles of primary and more than 225 miles of secondary roads.

Cement was in short supply toward the end of the construction season, due to depletion of supplies produced and stored during the winter months. Some bridges for which contracts were awarded during 1950 were not started because of the lack of materials.

The department anticipates that all materials will be available next spring to complete the jobs awarded this year. If the shaky world situation remains as it is, there will be shortages of materials, but progress can be made on highway construction, according to general department opinion.

William H. Palmer,
Administration Division Assistant

NEW HAMPSHIRE—The 1950 program called for the construction of approximately 70 miles of primary, secondary, state aid highways, at a cost of roughly 8 million dollars. The program probably will not be completed until next spring, primarily due to the lack of enough engineers to turn out the designs and surveys of many of the smaller projects.

The 1951-1952 construction re-

• West approach to the steel bridge over the Willamette River in Portland, Oregon, a relocated section of U. S. 99W, completed in 1950 at a cost of $1,420,000.

surfacing and betterment program calls for approximately 122 miles of construction costing 9 million dollars for each of the two years. In 1950 we asphalt- and peastone-resurfaced 100 miles of state highway system and plan to do 200 miles during each of the next two years.

A definite shortage of peastone threatened us many times this year, and since we will obviously use twice as much next year and the year after, a conference was held at the department's hearing room attended by peastone manufacturers, in order that they might determine what they best could do to supply our needs.

William L. Newell,
Public Relations

NEW JERSEY—There was expended for the construction of roads on the state highway system the amount of $15,407,429.92; for bridge construction the amount of $14,133,370.74; for Federal Aid secondary highways the sum of $2,154,331.10. There was also constructed on the municipal roads systems of the various municipalities contract amounts of $7,210,626.33.

Trenton Freeway—The general scheme of the new Trenton Freeway utilizes the abandoned portion of the Old Delaware and Raritan Canal to provide a dual, grade-separated artery from the Delaware River at Bridge Street to the Brunswick Pike (N.J. Route 26—U.S. 1) with ample provisions for directional interchange.

The plan will also be developed to accommodate Route 29 extending from Lambertville and a new artery to follow the old canal bed southerly to connect with Route 39 near Bordentown.

Present contracts to be completed by the end of 1950 will provide for traffic from Greenwood and South Clinton Avenues to Market Street over the Freeway Connection and north to Perry Street over the Freeway proper.

The department experienced some delay in the prosecution of its programs due to cement and steel shortages, especially on some of the larger bridge contracts.

With reference to the program for the 1951 period, please be advised that this has not as yet been released for general publication.

W. Carman Davis,
Engineer of Special Assignments

NEW MEXICO—To date we have let to contract during 1950 the following mileage:

System	Mileage	Estimated Cost
F.A. primary	93.206	$ 5,963,421.87
F.A. secondary	391.955	6,192,897.98
State	307.027	1,511,283.26
Totals	792.188	$13,667,603.11

We had another letting on December 15 which will add approximately 12.786 miles and $2,300,000 to the totals on the Federal Aid Primary System; 14.866 miles and $340,000 to the Federal Aid Secondary System; and 19,400 miles and $150,000 to the State System. We are also planning on having another letting on December 29, if we can make it. In summarizing this information, it appears that we will have put under contract during 1950 somewhere in the neighborhood of 850 miles at a total cost of approximately $16,500,000 dollars.

Our estimate for 1951 is not quite as large as what was accomplished during 1950. Mileage figures are very misleading; we therefore do not wish to guess on that figure. However, we expect to spend at least $12,000,000 on new construction.

The only shortage that hindered us to any extent was the shortage of steel, which delayed the start of our bridge work. Ninety days was the time usually quoted on steel delivery.

The most outstanding project of the year is a 7.954 mile project on U.S. 66, which was let to contract December 15. This project is in the vicinity of Alubuquerque, N. M., and is expected to cost $1,800,000 because of the huge quantities of dirt and rock which must be moved in the Sandia Mountains, east of Albuquerque.

L. D. Wilson,
Administration Engineer

NEW YORK — In New York State the state highways are considered the primary system and the county and town roads the secondary system. Through November 30, 1950, the State Department of Public Works has awarded on state highways 359.54 contract miles of construction and reconstruction work for a value of $88,094,058. The department anticipates awarding in December, 1950, an additional 45.21 miles at a value of $4,878,000.

• A view of the construction work inside the Baytown Tunnel in Houston, Texas, preparing a section for the two lanes of traffic it will carry when completed.

The construction and reconstruction projects on the secondary system are reported annually by the several counties and towns to the Superintendent of Public Works. This information is not available until late in January, 1951.

The 1951 construction program is under study at the present time, and no figures are available.

B. A. Lafeve,
Director

NEW YORK CITY—The Department of Public Works awarded contracts during the year 1950, totalling approximately $44,000,000. This is broken down as follows:

(a) Hospitals, Health Centers, Libraries, Fire and Police Stations, and other Public Buildings	$18,500,000
(b) Sewage Treatment Plants and Incinerators	19,000,000
(c) Bridges and Miscellaneous Structures	6,500,000
Total	$44,000,000

(Figures are approximate.)

Our scheduled construction program for 1951 includes over $110,000,000 in value of building projects, most of which are hospitals; about $20,000,000 for our bridge improvements; and over $23,000,000 for sewage treatment plants and incinerators. The execution of this program depends largely on the war situation. It does not appear at the present writing that such a large program will be possible, as there are already signs of shortages of

such critical materials as structural steel, aluminum, copper, etc.

During 1950 the only difficulties we encountered were caused by a number of strikes, which delayed some of our construction operations; also, since the start of the Korean War, structural steel has been very difficult to obtain.

Frederick H. Zurmuhlen, Commissioner

NORTH CAROLINA—The following figures show contracts awarded from January 1, 1950, through November 9, 1950, plus estimated amounts for November 28, 1950, letting. Estimates for December letting are not available.

Road Construction Let to Contract in 1950

	Miles	Estimated Cost
Primary	584	$15,318,000.00
Secondary	4767	33,947,000.00
Totals	5351	$49,295,000.00

In addition to the above, a large road construction program was carried on by state forces. The figures showing amount of this work have not yet been tabulated.

Work planned for 1951 is about the same as will be accomplished in 1950.

Shortages in cement and steel, particularly structural steel, have hindered our road building efforts to a considerable extent in 1950.

You will note that the above figures show work let to contract in 1950 instead of built in 1950. The latter information is not available yet.

J. L. Morson, Roadway Planning Engineer

NORTH DAKOTA—During the 1950 construction season the North Dakota State Highway Department completed and improved 520 miles of State highways on a contract basis at a cost of $9,500,000.00. An additional 322 miles were constructed on the county feeder system at a cost of $1,100,000.00.

The construction program for 1951 is planned for a similar expenditure and mileage on an equal basis with that of 1950.

M. P. Wynkoop, Chief Engineer

OHIO—As I presume may be the case in many states, the extent of work let to contract in Ohio in 1951 is contingent upon our legislature. The amount of gasoline tax in Ohio is not sufficient to match the available federal money. The extent of the program over and above that formulated from regular gas tax funds is determined by the general revenue funds appropriated to our use by the legislature, which will convene in January.

The mileage and cost of work let to contract in 1950 is as follows:

Primary—546 miles
Cost—$78,666,911
Secondary—264 miles
Cost—$5,683,657

The above cost figures include engineering and right of way and are actual except for the last letting of the year, held on December 12. The cost included for that letting is based on program figures.

Due to the aforementioned question of funds, it is impossible to give information for 1951 other than the following, which covers a two-year program, providing funds are made available.

A $200,000,000 program for the years 1951 and 1952 has been planned after completing a record-breaking $80,000,000 program for 1950.

This program was worked out after careful studies of projects most urgently needed in the state because of traffic and safety problems. More than 400 highway jobs are scheduled and the detailed plans for many are already being prepared.

If funds are available, we are in a position to carry out a $100,000,000 program in each of the next two years. This has been made possible by the functions of our Bureau of Planning and Programming, the engineers' training program, and the use of consulting engineers by various cities.

The 1951-52 program includes some 765 miles of major construction, more than 250 new bridges, and 795 miles of resurfacing and hazard eliminations.

In regard to the inquiry as to factors hindering our road building efforts in 1950, Ohio was not affected to a great extent. The critical cement situation did necessitate postponement of some concrete placing which otherwise would have been done this fall.

L. F. Schaeublin, Assistant Director

OREGON—The following data cover the year 1950:

I. Mileages of Work performed in 1950 Type of Work	Primary Highways (Miles)	Secondary Highways (Miles)	County Roads (Miles)
Bituminous pavement	57	10	2
Bituminous macadam	8	15	
Oiled surfacing	39	44	51
Rock surfacing	77	65	52
Grading only	69	39	27
Bridges and grade separations (number)	27	2	3

II. Estimated Dollar Value of Types Type of Work	Estimated Expenditure in 1950 for Each Type
Bituminous pavement	$ 1,800,000
Bituminous macadam	500,000
Oiled surfacing	1,750,000
Rock surfacing	2,250,000
Grading	5,000,000
Bridges	3,700,000
	$15,000,000

The 1951 program of highway construction should compare favorably with that of 1950. There were no major factors that hindered Oregon's road-building efforts in 1950. Future construction plans depend upon what extent the present world situation is aggravated—cannot be determined now.

R. H. Baldock, State Highway Engineer
W. C. Williams, Assistant State Highway Engineer

PENNSYLVANIA—In 1950 the Pennsylvania Department of Highways constructed approximately 525 miles of primary roads and streets and 1,050 miles of secondary roads. Approximately $101,000,000 was expended on the primary road construction and $13,000,000 on the secondary road construction.

During 1951 the program, both for mileage and money, will be approximately 10 percent less than in 1950.

Shortage of cement and steel hindered our road building efforts in

• A highway grade separation over S. R. 2 in Bratenahl, Cuyahoga Cy., Ohio.

1950 although we have completed a program that was up to our expectations.

It is impossible to determine at this time the effect of the shaky world situation on future construction plans. Up to this time, we have proceeded on a normal basis as we feel that highway construction is vitally necessary to a wartime and a peacetime economy.

E. L. Schmidt,
Chief Engineer

SOUTH CAROLINA—The 1950 construction and improvement work on roads and bridges carried out by the South Carolina Highway Department added approximately 1,180 miles of paving to the state highway system, and the entire program cost approximately $16,000,000. Most of the awards made during the year were on secondary roads.

The Department continued throughout the year to emphasize the construction of secondary (farm-to-market) roads, while opening up several bad traffic bottlenecks on main routes in urban areas.

One of the main undertakings during the year was resurfacing badly worn paved roads. The department expended approximately $2,000,000 for retreatment work during the year, and intends to spend a similar amount on this important work in 1951. The greater portion of this work was let to contract, and was in addition to the $16,000,000 in construction awards.

The supply of labor and materials was adequate until the outbreak of the Korean war. Some shortages in cement and steel supplies developed in the latter part of the year, but on the whole the department was able to proceed with its program. The outlook in this respect in 1951 depends on the turn of the war, now admittedly unpredictable.

Jesse A. Rutledge,
Director, Public Relations

SOUTH DAKOTA—The following contracts were let for South Dakota in 1950:

State Primary Roads

Type	Miles	Cost Contract plus 10% for Eng.
Grading—service gravel	149.09	$2,151,105.98
Structures		143,314.60
Gravel surface	17.18	107,733.46
Base and material	168.053	1,913,524.56
Seal only	56.006	110,039.00
Reseal and retread	228.72	485,688.75
Pavement	.547	50,558.56

State Secondary Roads

Grading—service gravel	37.13	$ 788,446.13
Structures		454,840.18
Gravel surface	73.391	110,365.96
Base and material	86.716	868,749.43
Reseal and retread	22.27	114,804.91
Concrete paving	12.499	748,809.63

County Secondary

Grading and service gravel	112.543	$ 603,641.31
Structures		363,430.86
Gravel surface	231.860	405,255.40
Base and material	43.16	460,520.50
Concrete pavement	0.5	79,033.22

Our plans for 1951 call for approximately the same number of miles of road as last year, requiring about the same expenditure of money. About 25 miles of concrete paving is included in these plans.

Very little time was lost in our 1950 road building program except for the usual delays due to weather conditions. There were a few delays on some structural work due to a shortage of cement.

E. B. McDonald,
Soils Engineer

WISCONSIN—It is not possible at this time to give detailed information, since 1950 contract work is still underway. We can say, however, that 1950 is a slightly bigger year than was 1949, when contracts awarded to private contractors amounted to about $25,910,000 and agreements for projects built by county forces totaled some $2,930,000, in addition to a $10,000,000 state trunk highway maintenance budget.

Planned work for 1950, for state trunk improvement and such off-the-system work as administered by the commission in connection with Federal Aid secondary funds, was early in the year estimated to be 113 miles of portland cement concrete, 1130 miles of bituminous mixes and treated types, and 455 miles of other types (grading prior to surfacing, crushed stone or gravel bases, etc.)

Plans for 1951 indicate about the same size of program, but proposed mileage of each type of work has not yet been determined.

Factors tending to slow down road building efforts in 1950 included difficulty in obtaining cement and slow delivery of steel.

E. L. Roettiger,
State Highway Engineer

WEST VIRGINIA—1. Primary roads—miles built and cost in 1950 including eighteen bridge contracts.

Construction contracts, 26.67 miles		$4,903,420
Engineering and contingencies 10 percent		490,342
		$5,393,762
Right-of-way		882,000
Total		$6,275,762

In addition to the above, 391.71 miles of existing blacktop and concrete roads were surfaced or resurfaced, ranging from light bituminous treatments to heavy plant mixes, at a cost of $4,169,329.

2. Secondary roads—miles built and cost in 1950. Here the problem is still more complicated, as the work may be done by contract by state forces, by prison labor, or by combinations of these. Roughly the figures are as follows:

827 miles at $13,250,000

The above figure includes approximately $450,000 for right-of-way and 215 miles of bituminous surfaces costing $826,700.

Our 1951 construction can not be accurately predicted at this time. It will depend in large part upon the action of the 1951 legislature, which convenes in January. We can't foretell what financial assistance may be given to supplement regular motor vehicle and gasoline tax income. However, we anticipate that secondary road construction will continue at about the same rate as 1950.

There was no great hindrance to road building in West Virginia in 1950. Cement shortages delayed concrete work and one concrete pavement job was not finished this year because of this factor. Steel deliveries were slow, but anticipated.

Ray Cavendish,
Commissioner

TEXAS—The Texas Highway Department completed work on 603.5 miles of primary highways and 3,481.5 miles of secondary roads during the fiscal year of 1950. The total outlay for primary roads was $39,782,519.45 and for secondary roads $33,278,531.79.

During 1951 this department plans to build 4,500 miles at a cost of $90,000,000.

During 1950 our road building efforts were hindered somewhat by the shortage of railroad gondola cars, cement, creosoted lumber and delays in delivery of steel.

The effect of the shaky world situation on our future construction plans will be to speed up previously planned construction as much as possible. Realizing at the present time that heavy military traffic is now being added to highways already over-burdened by civilian traffic, it will be our purpose to do everything possible to build and maintain a highway system in this state adequate to meet the needs of that traffic.

D. C. Greer,
State Highway Engineer

(*Continued on page* 116)

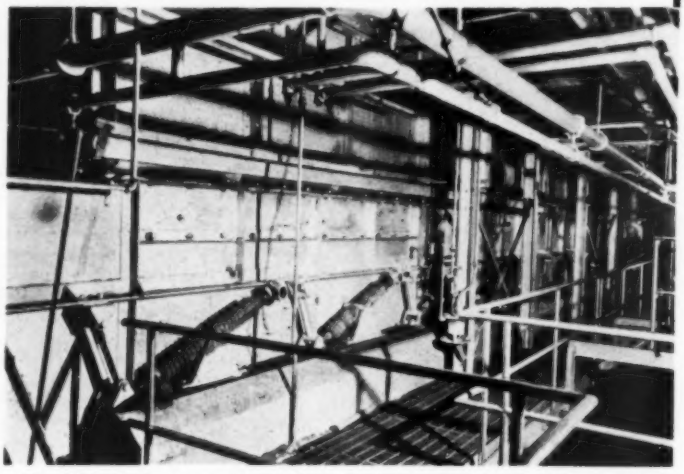
1950 Fourth Straight Peak Year

By WALTER E. TRAUFFER

Production, shipments, values reach new highs: mill stocks at near record low.

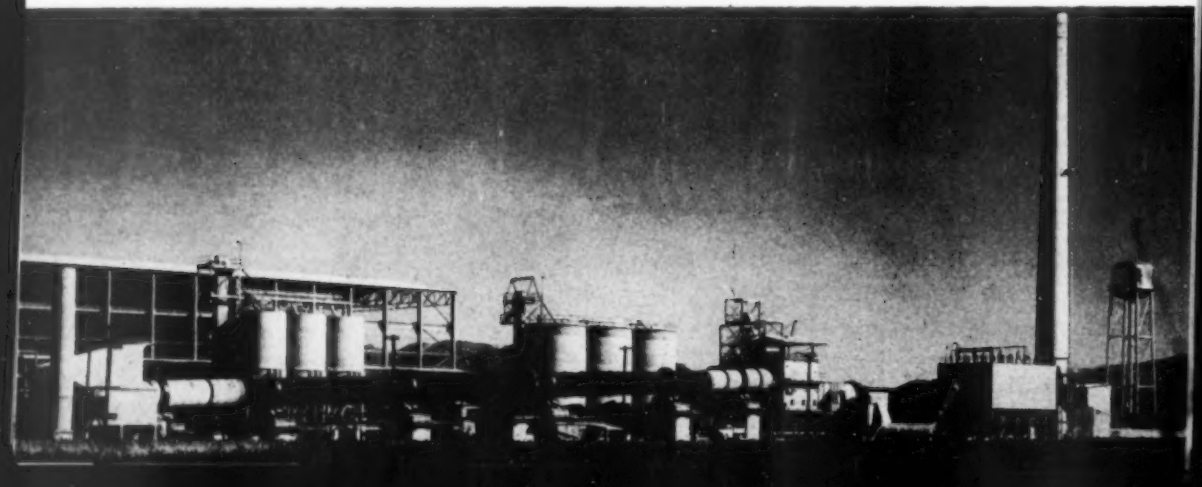
THE production and shipments of portland cement in 1950 set new all-time records for the fourth consecutive year. Complete official figures are available only through October and these show production to be 6.7 percent and shipments 10.2 percent ahead of the first ten months of 1949. Using these percentages for the full year the total 1950 production should be about 224,000,000 bbls. and shipments about 227,000,000 bbls. This compares to production of 209,863,000 bbls. and shipments of 206,193,000 bbls. in 1949. These records were possible only through the untiring effort of the entire industry against innumerable handicaps to overcome the shortage of cement which existed during a large part of the year, and its foresight and courage in carrying out a vast expansion program in the face of prohibitive construction costs.

Again during 1950 the industry produced at a high percentage of its rated capacity, probably exceeding even the 81 percent record level maintained during 1948 and 1949.

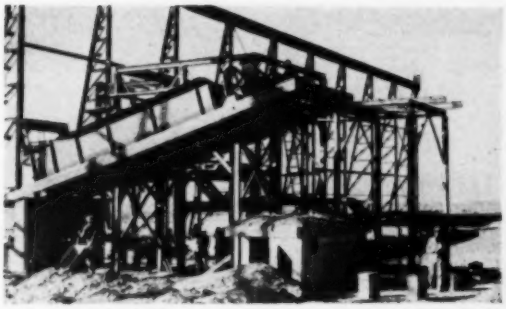


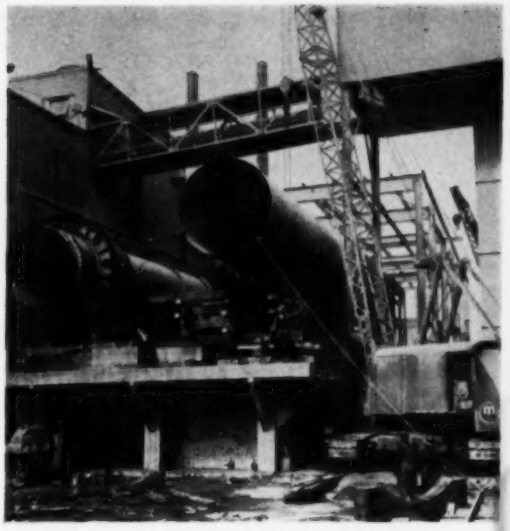
• The 4½- by 70-ft. air-quenching clinker cooler for the new kiln installed by the Dewey Portland Cement Company at its Davenport, Ia., plant. This was a part of a $2,000,000 improvement program.

Using the 1949 official figures and our 1950 estimates of production and capacity for the year to date, we estimate that the industry operated at about 83 percent of its capacity in 1950, probably an all-time record. Had it not been for coal and freight car shortages, sporadic strikes, and similar handicaps to normal production, the percentage of capacity achieved might have approached 90 percent, which surely must be near the saturation point. One of the largest companies in this country, operating plants in several states, actually did produce 90



• New dry-process plant of the Arizona Portland Cement Company at Rillito, Ariz., near Tucson. The first large-scale commercial operation in the state, the plant attained full production of 2,000 bbls. per day early in 1950.





• The new oyster shell washing system just completed at the Halliburton Portland Cement Company's plant at Corpus Christi, Tex.

• Right: The two new kilns being installed at the Huron Portland Cement Company's Alpena, Mich., plant. This plant is now, at least temporarily, the largest in the world.

percent of its capacity in 1950 in spite of a 4 percent loss due to strikes and 3½ percent for stock adjustment. Many other companies reported the greatest volume of production and the highest percentage of capacity in their histories.

As in every year since 1943, except 1949, shipments exceeded production in the first 10 months of 1950. As a result, plant stocks at the end of October, usually the low point of the year, were 5,958,000 bbls., 30 percent under the October, 1949, level of 8,577,000 bbls. Except for the October, 1948, level of 5,668,000 bbls., this is the lowest figure in 20 years. Clinker stocks on October 31, 1950, were 2,850,000 bbls., 21 percent below the figure on that date in 1949.

PRODUCTION HANDICAPS

The portland cement industry was confronted by so many difficulties during 1950 that its record output in spite of them is a real tribute to its ability to come through in a crisis. One large producer with plants in all parts of the country said that in many sections—and in the Northeast to an exaggerated degree—mills were closed down early in 1950 because their storages were filled with both cement and clinker. Severe weather conditions and a sharp curtailment of construction activities was the cause. When construction demands later began to deplete these stocks, the industry had to contend with the 1950 coal strike, or restricted production program, which further curtailed production. Then came a series of crippling strikes within the industry at a time when the demand for cement had reached an all-time high. These strikes kept a large segment of the industry idle over a period of months, placing a severe burden on those mills still in operation and contributing largely to the shortage of cement which actually existed in this country during the last year. Producers in general believe that had these strikes not taken place, cement would have been available in sufficient quantity to meet all construction needs. This excessive demand on some plants depleted their stocks to such an extent that many manufacturers doubt their ability to fill their storage to capacity before the 1951 active building season arrives. It seems possible that the industry will face another year of heavy demand with less cement on hand than in 1950.

Periodic shortages of box and hopper cars also handicapped production to some extent, and these shortages are expected to extend into 1951. There were no complaints of labor shortages in 1950, but producers anticipate trouble in this department by spring. There were no complaints of shortages of materials, but here also trouble is expected in 1951.

PLANT PRICING

According to several cement manufacturers, the Supreme Court decision requiring cement to be sold f.o.b. the plants, along with the sharply increased freight rates, was responsible not only for increased cost of cement to consumers but also for shortages in certain areas. One producer said that had manufacturers been free to follow their traditional marketing practice of absorbing freight disadvantages in order to meet competition, cement users would have saved at least $35,000,000 in 1950. In spite of the fact that at least a part of this sum went to the producers, many expressed their feeling that plant pricing should be abolished. As one stated, "Wholly separate from any 'defense' or 'war' program, doubtless the most important economic legislation that will come before the 82nd Congress will be a bill to affirmatively validate the legal right of a competitor engaged in interstate commerce to meet his competition at the market place through the absorption of his economic disadvantages, freightwise and otherwise."

VALUE AND PRICES

No official information is available on the net mill value of the cement produced in 1950, but it is certain that this established an all-time record total for the fifth consecutive year, and probably by a wider margin. With an increase of about 10 percent in shipments and perhaps 3 percent in prices at the mill, the 1949 record income of $473,177,032 was probably exceeded by about 13 percent for a total approaching $534,000,000 in 1950. The average mill value of portland cement in 1948 was $2.18 per bbl. and in 1949 it was $2.30 per bbl. In 1950 it was probably about $2.35 per bbl., the highest price in 61 years. The average mill price at the end of the year was somewhat higher due to recent price hikes, and further increases have been scheduled for early in 1951.

COSTS AND PRICES

The cost of producing cement increased considerably during 1950, and it is expected that it will continue to increase unless some effective check on inflation is applied. Increases in wage rates, fuel, supply,

• The new Huron clinker grinding and cement distributing plant at Superior, Wis. This plant receives its clinker by boat from Alpena, Mich.

freight rates, etc., have been contributing factors. The increased productive efficiency of the industry as a whole, due to the extensive plant improvements recently completed or under way, is expected only partially to compensate for the many other factors increasing costs.

Cement prices have lagged far behind those of most other building materials, having increased only 49.2 percent from 1939 to September, 1950, according to the Bureau of Labor Statistics; the increase in the cost of all building materials during this period was 142.7 percent; that of lumber was 296.8 percent. Producers have made every effort to absorb these increased costs and were able to do so to a large extent in 1950 due to the high operating rate. There is a limit to what can be done in this direction, however, and any further increases in the cost of production will undoubtedly directly affect the price of cement to the consumer. Any such price increases, however, are not expected to be of such magnitude as to discourage new construction. The expectation of a tax rise promises to make any appreciable gain in the net earnings of the industry unlikely.

EXPORTS

Exports of portland cement from the United States during 1950 were apparently down considerably from the preceding year, according to partial figures available. These indicate a decrease of about 20 percent from the 4,561,899 bbl. total of exports in 1949, or about 3,600,000 bbls. Of the 1949 total, 2,345,044 bbls. went to North America—1,505,976 bbls. of this to Canada alone. A total of 1,919,621 bbls. went to South America, and the balance of 307,234 bbls. to all parts of the world.

The chief deterrent to exports, of course, was the shortage of cement in this country during the greater part of the year. Most cement producers apparently agreed with their customers that domestic needs should be taken care of first. Canada, which bought widely from this country during 1949, was still experiencing a shortage in 1950, a situation which was offset somewhat by the increased producing capacity of the Canadian cement industry. It is also doubtful if any other country received more cement from us than in 1949 as many of them have expanded their own output, and the building boom in many of them has also tapered off.

IMPORTS

Little is known about the volume of imports of cement into the United States in 1950 but it undoubtedly exceeded the total of 109,821 bbls. imported in 1949 for the same reason that exports were probably down—the shortage of cement in this country. The fragmentary information available indicates that there were imports in fairly large volume from several countries into various coastal areas, apparently particularly in South Florida and the Gulf Coast, where the cement shortage seemed to be most severe.

FUTURE PROSPECTS

As of now the prospects for the cement industry in 1951 are good, even if world conditions get much worse than now seems likely. Producers in some areas feel that demand will equal that in 1950; more of them feel that there will be some decrease in demand but that shipments will total perhaps 200,000,000 barrels, more than in any previous year except 1948, 1949, and 1950. The various estimates that 1951

• Huron's new distributing plant at Green Bay, Wis., its tenth on the Great Lakes. Cement is brought from Alpena, Mich., by boat.

construction volume will be down 15 to 20 percent are quoted. All make the qualification, however, that a drastic change in the world situation, either for the better or the worse, can radically affect the demand for cement. It is also felt that the industry is now able to take care of any possible increase in demand.

Other handicaps to production expected in 1951 are shortages of repair parts and supplies caused by the steel situation, shortages of labor due to defense demands, continued shortages of freight cars, etc. It is felt in some quarters, however, that strikes will be less of a problem since pensions and/or wage increases were granted in 1950 and still another substantial wage increase is indicated in the Spring.

CAPACITY INCREASE

The cement industry in the United States and possessions increased its capacity considerably in 1950, perhaps more than in any year since before the depression, according to estimates based on incomplete available information. Three new plants were completed in 1950, and 27 plants are known to have made additions which added a total of about 54,000 bbls. daily or 13,300,000 bbls. annually to the capacity of the industry. Improvements made at other plants on which we have no information would probably add considerably to these totals. On the other hand, some of the new equipment installed replaced obsolete equipment which was then taken out of service, but in most cases the old equipment was either kept in operation or held in reserve. Some of this capacity was also installed for the manufacture of masonry, mortar, and other special cements. In January, 1950, we estimated that the capacity of the industry was increased about 5,000,000 bbls. in 1949, and recent official figures say 4,700,000 bbls.; so it should be safe to assume that the actual capacity increase in 1950 was about 13,000,000 bbls.

The three new plants which went into operation during 1950 are those of the Halliburton Portland Cement Company, Corpus Christi, Tex., the Arizona Portland Cement Company, Rillito, Ariz., and the Missouri Portland Cement Company, Prospect Hill, Mo. The Huron Portland Cement Company's new clinker grinding and packing plant at Superior, Wis., together with additional kilns at the Alpena plant which will provide the clinker, might be considered another new plant.

Apparently there were no increases of any importance in the capacity of the cement industry in Canada during the year after several years during which substantial additions were made.

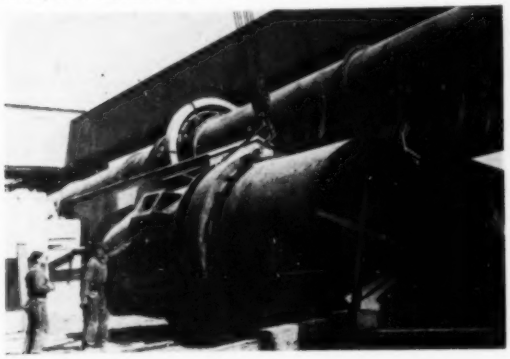
CAPACITY

The estimated capacity of the portland cement industry was 254,272,378 bbls. in 1948 and 258,948,399 bbls. in 1949. At the end of 1950 it was about 272,000,000 bbls. and by the end of 1951, if all projects under way or definitely planned are completed, it should be about 288,000,000 bbls. annually. There should be no more shortages for a few years at least.

FUTURE INCREASES

At this time only very incomplete information is available on the amount of plant improvement and expansion now going on in the portland cement industry or on the amount definitely planned. It seems certain, however, that at least four new cement plants will be completed before the end of 1951 in this country and two in Canada. The Lone Star Cement Corporation has well under way two new 2,000-bbl. dry process plants at Catawba Creek, Va., and Maryneal, Tex.

The Ideal Cement Company is converting a war-time aluminum plant at Baton Rouge, La., into a 1,500,000-bbl. cement plant and the Marquette Cement Manufacturing Company is building a completely new 1,000,000-bbl. wet process plant at Brandon, Miss. Both are scheduled for completion early in 1951. These four plants will have a combined capacity of 18,000 bbls. daily or 4,500,000 bbls. annually.



• The third 9- by 314-ft. kiln installed at the Northampton, Pa., plant of the Lawrence Portland Cement Company in recent years.

At least two other new plants are proposed for possible 1951 completion, but there is as yet no definite assurance that they will be built. Other new plants are, as far as we can determine, only rumored.

In addition to the new plants under way or planned, there is a tremendous amount of plant improvement and expansion work under way or definitely planned. According to our incomplete information, 16 plants have major programs, most of them well under way, which will increase capacity in the United States alone by 56,000 bbls. daily or about 14,000,000 bbls. annually. These plants, together with the new plants listed above, will install 18 new kilns.

In Canada the Canada Cement Company is starting construction of a new plant in New Brunswick, and another plant, on which little information is available, is to be built in Newfoundland. Existing Canadian plants will be improved and enlarged considerably during 1951. Work at three plants will involve three new kilns and added capacity of 9,500 bbls. daily.

MISCELLANEOUS

A phenomenon which has become more pronounced in the last few years is the fact that cement consumption continues to increase more rapidly than the increase in real construction volume. The only explanation for this must be that concrete is being used in an increasing percentage of construction. Much of the credit for this should go to the concrete building units industry which has grown rapidly and is taking away an increasing amount of business from lumber, clay products, and probably even the steel industry. The ready-mixed concrete industry has also helped the swing to concrete by making this product more readily available for all types of construction. Cement producers also credit ready-mix with spreading the construction season further into the winter and in this way leveling off to some extent the demand for cement. It is estimated that concrete products used nearly 8 percent and ready-mixed concrete about 17 percent of the portland cement produced in 1950.

PLANT DEVELOPMENTS

Allentown The Allentown Portland Cement Company with a plant at Evansville, Pa., installed new coal-grinding equipment in 1950, consisting of a Ruggles-Coles drier and a 7- by 26-ft. tube mill, complete with transformer station and dust collector. Fuller-Kinyon conveying equipment was installed to carry the coal from the mill to kiln storage bins. A new addition to the finish-grinding department provided for the production of high-early-strength and masonry cements. Equipment included a complete Poidometer installation for the masonry cement raw materials to be ground, a new 7- by 35-ft. tube mill and a 16-ft. Sturtevant separator. In the grinding department Fuller-Huron Airslides replaced screw conveyors, and a complete new Fuller-Kinyon system was installed to handle the products from the old as well as the new equipment. Fuller cement coolers were installed on all grinding units. In the packhouse new St. Regis packers were added, along with iron mesh conveyor belts for carrying sacked cement to the cars. A new 42- by 234-ft. machine shop and storage house was built. The structure is completely equipped with overhead trolley, machine tools, storage facilities, etc., and is so arranged that material can be unloaded direct from cars or trucks within the building.

Alpha The Alpha Portland Cement Company made no major improvements to any of its plants in 1950, directing its efforts to making full use of the productive capacity of its plants. Some additions to the cement storage capacity of its plants are planned in order to help relieve existing cement shortages.

• The improved and enlarged cement storage and distributing plant of the Lehigh Portland Cement Company at Buffalo, N. Y.

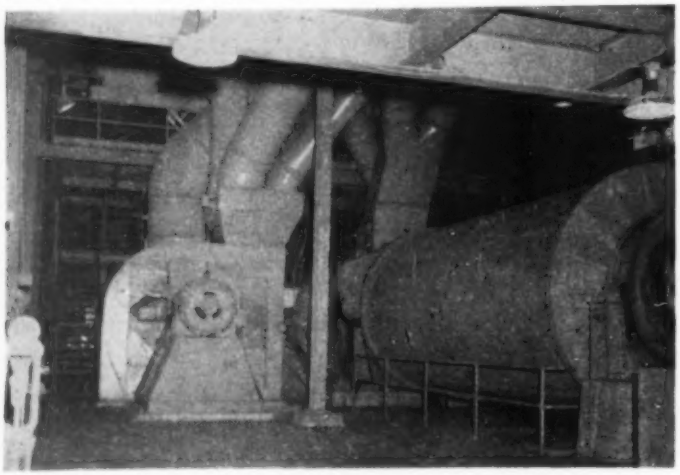
Arizona The Arizona Portland Cement Company, a wholly-owned subsidiary of the California Portland Cement Company, early in 1950 put in operation at Rillito, near Tucson, Ariz., a new dry-process plant with a capacity of 2,000 bbls. daily. The features of this plant include the use of closed circuit grinding with air separation on both raw and finish ends, and the 9½- by 335-ft. rotary kiln. The kiln is connected to Multiclone and Cottrell collectors and a 225-ft. Rust kiln stack. A diesel generating plant supplies power for all operations.

Bessemer The Bessemer Limestone and Cement Company improved its plant at Walford Station, Pa., in 1950 by the installation of three Bradley Hercules mills in its clinker grinding department. These were provided with suitable dust collectors. Some heavy repairs were also made. At this time no major improvements or expansions are contemplated for 1951.

British Columbia The British Columbia Cement Company Limited, is contemplating a major expansion program at its plant at Bamberton, Vancouver Island, B. C., which will involve the expenditure of two to three million dollars. This program will include the installation of a new kiln, slurry mixer, clinker storage, etc. It is very doubtful if this project will be completed in 1951.

Calaveras The Calaveras Cement Company, which about a year ago completed a $2,500,000 post-war expansion program, recently announced an additional $600,000 investment to be made which will further increase its capacity. Included will be additional raw and finish mills, four new cement storage silos, and four new slurry silos. It was announced that these additions would be completed early enough in 1951 to build up an inventory of cement for the rush season.

California No official information is available on the extensive program started late in 1949 at the Colton, Calif., plant of the California Portland Cement Company. Whether this was completed in 1950 is not known. This program is reported to involve an



• One of the two new raw-grinding mills installed as a part of the $4,000,000 improvement and expansion program completed at Lehigh's Fordwick, Va., plant in 1950.

expenditure of nearly $4,000,000 and to include a completely new crushing plant among other items.

Canada Cement The Canada Cement Company has been prominently in the news since the end of World War II with an extensive improvement and expansion program which has affected nearly all of its seven producing plants. This program has included a new kiln at the Montreal East plant, together with electrical precipitators and much other equipment; a new kiln and other equipment at Belleville, Ont., which doubled the capacity of that plant; a similar program at Exshaw, Alta., which doubled the capacity of that plant; and a number of other installations at its plants which increased their capacity and their efficiency. These included new bulk loading facilities, dust collectors, new crushing plants, new quarry equipment, laboratories, cafeterias, recreation buildings for employees, etc. Most of this work was completed in 1949.

In spite of the fact that the company has expanded its productive capacity by 40 percent since 1946, there have still been shortages of cement in Canada. Further plant expansions recently announced will, when completed, add another 20 percent to the company's postwar capacity. The most important item in this program is a new plant in New Brunswick which is expected to be in operation by June, 1951. This plant will have a capacity of 800,000 bbls. annually.

A $5,000,000 program at Canada's Exshaw plant will increase its capacity about 1,000,000 bbls. annually. This is also expected to be completed in 1951.

Consolidated The Consolidated Cement Corporation is reported to have under way a rehabilitation and improvement program at its Fredonia, Kans., plant. The development of a new source of limestone supply is under way at its Cement City, Mich., operation.

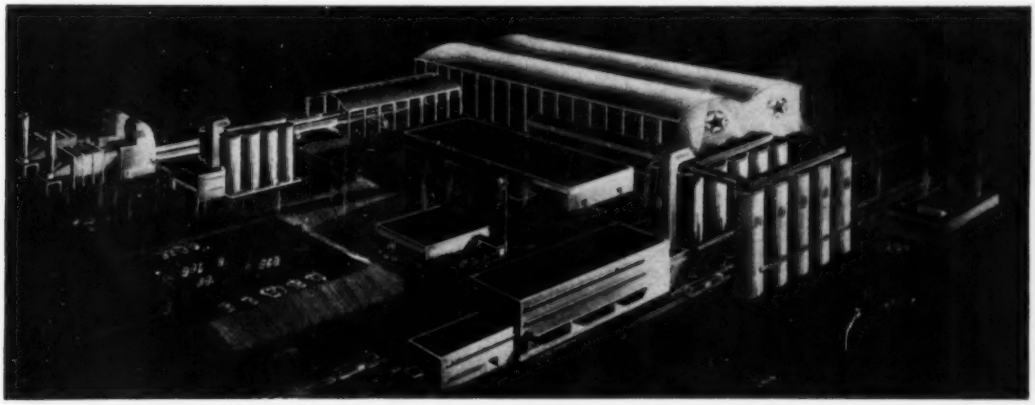
Dewey The Dewey Portland Cement Company early in 1950 completed an extensive expansion and improvement program at its Davenport, Ia., plant which involved the expenditure of about $2,000,000. A series of improvements had been made to this plant over the years which had brought its capacity up to 4,500 bbls. daily. It had three 11- by 175-ft. wet kilns equipped with slurry filters, waste-heat boilers, direct-firing coal mills and air-quenching clinker coolers. The new program included the installation of a fourth 11- by 375-ft. rotary kiln also equipped for direct firing and air quenching but not equipped with filters or waste-heat boiler. This equipment increased the plant's capacity by 2,400 bbls. daily. Other equipment added included two new finish-grinding mills, new slurry blending and proportioning tanks, and a second 225-ft.-dia. Dorr slurry thickener. New cement storage silos were built, as well as a new packkhouse and additional bulk-loading facilities.

Late in 1949 a $1,500,000 modernization program got under way at Dewey's Bartlesville, Okla., plant and this is reported to have been completed. New shipping facilities, generating equipment, dust collectors, etc. were included. The Crosby Engineering Company had the contract for this work.

Federal In 1950 the Federal Portland Cement Company, Inc., completed a new and modern chemical laboratory at its plant at Buffalo, N. Y. Contracts have been let for a new 11- by 375-ft. Allis-Chalmers rotary kiln which will be installed during the winter and is expected to be in operation by May 1, 1951. This kiln will replace one of the two existing 175-ft. kilns, the other being retained as a spare. The capacity of the raw department has been increased to take care of the added load and some increase has also been made in the capacity of the finish grinding department. The new addition is expected to increase the capacity of the plant by 2,500 bbls. per day or about 500,000 bbls. per year. It will also result in more economical production, and this is one of the prime reasons for making the installation.

General The General Portland Cement Company continued into 1950 its program of expansion and improvement. Most important was the work being done at the Dallas plant, which will add 1,250,000 bbls. annually to the output of the Trinity division. The work was expected to be completed late in 1950. It included a new

● This illustration is the architect's sketch of the $6,000,000 plant now under construction for the Lone Star Cement Corporation near Roanoke, Va. Left to right are the two 10- by 340-ft. kilns with their electrical precipitators and 100-ft. stacks, the eight slurry mixing silos, the storage building for limestone, shale, silica, clinker, etc., with the adjoining raw- and finish-mill building, the 15 cement storage silos, the packhouse and the big storage building. The office building is in the center, and the shops are at the extreme right. The layout of Lone Star's plant at Sweetwater, Tex., also under construction, is almost identical with that of the plant near Roanoke.



● A recent aerial view of the Marquette Cement Manufacturing Company's two-kiln, wet-process plant at Nashville, Tenn.

11½- by 425-ft. kiln, grinding equipment, and considerable other machinery. Improvements were also made at four other General plants: at Houston and Fort Worth, Tex., Tampa, Fla., and Chattanooga, Tenn.

Halliburton The new 4,000-bbl. per day wet process plant of the Halliburton Cement Company at Corpus Christi, Tex., began operations in February, 1950. Oyster shells are used as raw material, being recovered by a 16-in. Maxon hydraulic dredge. A recent addition to the plant is a system to wash from the shells a clay containing an excessive amount of silica. The clay is unloaded from barges by a crane and passed over two vibrating screens. Final cleaning is accomplished in an Akins spiral classifier.

Major equipment in the cement plant includes two 9½- by 300-ft. Traylor kilns, Allis-Chalmers raw and finish-grinding mills, Sturtevant separators, a 175-ft.-dia. Dorr thickener, etc. Fairbanks-Morse diesel generating sets, two rated at 2,000 hp. and two at 1,600 hp., provide power for all operations. The MacDonald Engineering Company was the general contractor for the construction of the entire plant.

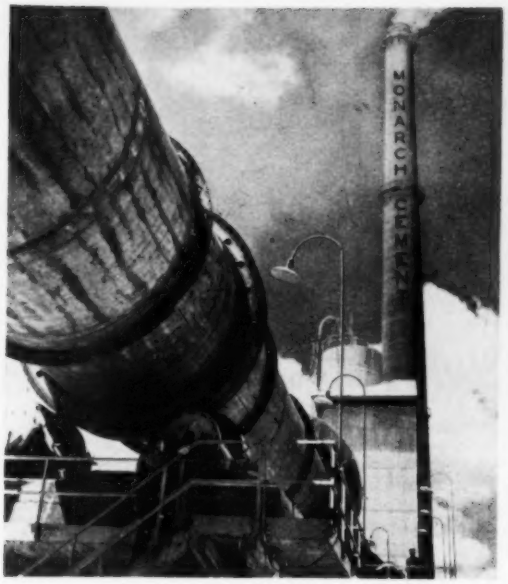
Hercules The Hercules Cement Corporation has embarked on a program of plant rebuilding which included the replacement of its kilns in 1951-2, but the outbreak of hostilities in Korea, prospective steel shortages, etc., caused deferment of a part of the program. The engineering for these improvements is being carried on and other improvements will be made, but construction will await an improvement in the outlook. Equipment which has already been purchased includes a new switchboard, dust collectors for the waste heat boiler stacks, the stone drier stack, and the mill rooms. An auxiliary boiler purchased to supplement the steam output of the waste heat boilers will be in operation late in 1951.

Huron The Huron Portland Cement Company's plant at Alpena, Mich., as a result of additions completed in November, 1950, can, at least temporarily, lay claim to being the largest plant on the North American continent and probably in the world. Additional production facilities were also added at Superior, Wis., in the form of a new clinker grinding plant which will receive clinker by boat from Alpena. Other storage and distribution facilities were completed at Green Bay, Wis., and Muskegon, Mich. An expansion program completed late in 1948 had increased the capacity of the Alpena plant 50 percent. This included the installation of four 10- by 153½-ft. kilns and much other equipment to supplement the existing kilns. As a result the daily capacity of the plant was 17,000 bbls. of clinker and 24,000 bbls. of cement. No estimate is made of the added capacity from the two new kilns just installed, but the plant's clinker producing capacity should now also approach 24,000 bbls. daily. The total amount of expansion in productive capacity since VJ Day now aggregates a 90 percent increase (in cement producing capacity).

At Alpena, Mich., the 1950 project included installation of two Allis-Chalmers 10- by 153-ft. kilns, with waste heat boilers and accessories; installation of a belt conveyor system for loading clinker on cargo vessels at the rate of 1,000 tons per hour; and a new system for the return of kiln dust to the raw mix.

At Superior, Wis., a complete new clinker grinding plant was constructed and in conjunction with it a storage and distribution plant to handle the finished cement. Clinker is shipped from the Alpena, Mich., mill by ore-type Great Lakes cargo vessels. At Superior clinker storage of 400,000 bbls. is provided. The grinding unit is an 8- by 30-ft. Allis-Chalmers two-compartment compeb mill, operated in closed circuit with a 16-ft. Sturtevant mechanical air separator. Finished cement is conveyed by a Fuller-Kinyon pump to the storage silos. Total storage capacity for finished cement is 52,000 bbls.

At Green Bay a new distributing



• A fourth 9½- by 18-ft. by 8-in. air-swept ball mill was installed by the Riverside Cement Company at its Oro Grande, Calif., plant.

• Left: The 11- by 230-ft. dry-process kiln installed at the Humboldt, Kan., plant of the Monarch Cement Company, completing a $1,500,000 improvement program. A second kiln will be installed in 1951.

plant was built, providing for 100,000 bbls. of storage capacity for five types of cement. A reinforced concrete packhouse has facilities for loading either bulk or packaged cement in trucks or railroad cars.

At Muskegon, Mich., additional cement storage silos were added to the distributing plant, which has been in operation since 1937, bringing the total storage capacity at Muskegon to 80,000 bbls.

Idaho The Idaho Portland Cement Company in 1950 began an expansion program which will more than double the plant's present capacity of 1,500 bbls. daily. Included is a 300-ft. kiln which will supplement the existing 200-ft. kiln, additional mills, a cooler, a coal mill, a large slurry basin and expanded facilities for sack and bulk loading. This work was originally scheduled for completion by January 1, 1951, but difficulties in obtaining material have caused a delay of several months. The MacDonald Engineering Company of San Francisco is doing the work.

Ideal After completing one of the largest expansion programs in the history of the industry the Ideal Cement Company found that there were still areas in its marketing territory which were not receiving enough cement to take care of requirements. As a result it has been decided to expand still further the company's facilities in 1951 in order to provide the necessary productive capacity. This program includes the addition of a new mill at Baton Rouge, La., and the addition of equipment at several other plants.

The company acquired the site for its new plant at Baton Rouge in June, 1950, along with much important equipment, from a wartime alumina plant. Work is currently progressing on the rearrangement of the equipment in place and the addition of other equipment. When completed in 1951 this plant will have a capacity of 1,500,000 bbls. annually.

This program also includes a $1,000,000 expenditure at Ideal's Ada, Okla., plant, where capacity will be increased by about 600,000 bbls. annually. This will include a new Traylor rotary kiln, new finish-grinding equipment, etc. New finish-grinding equipment will also be added at the Superior, Neb., plant. Improved facilities will be installed for handling raw materials at Mobile, Ala., and Boettcher, Colo. New wash and change houses for the convenience and comfort of employees will be installed at six of the company's 11 plants. A $3,500,000 program for the Trident plant announced early in 1950 for completion in 1953 would involve new kilns, mills, etc. Its completion will depend on conditions. The first step will be the addition of new finish-grinding equipment.

• One of the 18 new 140-bbl. bulk-cement delivery units added in 1950 to the fleet of the Riverside Cement Company.

Early in 1950 the company took a 25-year lease on a site for the construction of a $500,000 storage and packing plant to be built in New Orleans. This will have silo storage capacity for 100,000 bbls. Self-unloading barges will be used to bring cement to this site from the Mobile, Ala., producing plant, and presumably from the new Baton Rouge plant when it is completed.

Other miscellaneous improvements in various plants will bring the cost of this improvement program for 1951 up to about $6,000,000. Because of the uncertain world situation, however, present plans provide sufficient flexibility so that only such work as can be undertaken with reasonable expectation of its being completed will be incorporated in the program.

Lawrence The Lawrence Portland Cement Company during the summer of 1950 installed a new 9- by 314-ft. rotary kiln at its Northampton, Pa., plant. This makes a battery of three such kilns installed in the past few years. Two new 10,000-bbl. silos have also been installed in which the raw mix is aerated before being fed to the kilns. Old equipment throughout the mill is being replaced and modernized.

At its Thomaston, Me., plant equipment has been installed to permit the burning of oil in the kilns. Work also is going forward on the installation of a new 11- by 356-ft. kiln which will replace the smaller of the two kilns now in operation, and give the plant two large kilns of the same size. Six new Buell dust collectors will be installed in connection with this kiln. An extensive program of modernization has also been under way at this plant for some time. It is estimated that when the improvements undertaken and planned are completed, the company's productive capacity will have been increased about 20 percent or over 500,000 bbls. annually. Consummation of this program is, of course, dependent on availability of essential materials.

Lehigh During 1950 the Lehigh Portland Cement Company completed two major projects of its huge post-war improvement program which through 1949 had involved an expenditure of over $19,000,000. One of these involved the expenditure of $4,000,000 at the Fordwick, Va., plant, increasing its capacity from 3,200 bbls. to 4,800 bbls. daily. At this plant the improvements included the following: a new crushing and screening department; an entirely new raw mill department; a new material storage building, a new 11- by 200-ft. dry process kiln with a waste-heat boiler and air-quenching clinker cooler. No changes were made in the finish mill as it had been modernized some years ago. The old raw mill equipment has been retained for the manufacture of mortar cement.

• In this view of the South Dakota Cement Plant at Rapid City, S. D., are shown the new kiln and other items which doubled its original capacity of 2,000 bbls. daily.

The Mason City, Ia., plant was converted from the wet to the dry process, and its clinker producing capacity was increased about 660,000 bbls. annually. Improvements were made in the materials-handling and storage facilities and a new building was erected to house a completely new raw- and clinker-grinding department. An electrical precipitator was installed to collect kiln dust, and collectors were also placed in other parts of the plant. A new 7,500-kw. turbo-generator was installed, leaving the old one as a spare. Improvements in the packhouse are contemplated for 1951.

At Lehigh's Buffalo, N. Y., plant a new $150,000 bulk loading station for both cars and trucks was completed recently, including five 1,000-bbl. concrete silos and a new truck service and storage building.

A fine reduction crusher was installed in the clinker department of the Metaline Falls, Wash., plant, where a major improvement program had been completed in 1949. The capacities of the clinker-grinding departments at the Oglesby, Ill., and Union Bridge, Md., plants were also increased by the installation of additional preliminary grinding equipment.

For 1951 Lehigh is contemplating the installation of new crushers in the floors of the quarries of the Iola, Kan., and Birmingham, Ala., plants. Toward the end of the year there had been rumors that Lehigh might revive its plans for its construction of a new cement plant in northeast Florida. There has been no confirmation of these rumors.

Lone Star The Lone Star Cement Corporation, which made no outstanding improvements to its chain of plants in 1950, is prominently in the news for 1951, with two new plants to be completed in that year. These plants, at Catawba Creek, near Roanoke, Va., and at Maryneal, near Sweetwater, Tex., are both to be modern dry process operations with capacities of 4,000 bbls. daily. The Virginia plant is expected to be in operation early in 1951 and the Texas plant, Lone Star's third in that state, a few months later.

At the Virginia site a 9-mile railroad was constructed early in 1950 to connect with the Norfolk & Western Ry. The 500-t.p.h. crushing and screening plant at the quarry is near completion. A 1,000-ft. belt conveyor will carry the rock to the storage building. The mill building will house five mills for raw and finish grinding. Pneumatic conveying systems will carry the fine raw material to the eight raw-mix silos from which the two 10- by 340-ft. kilns will be fed. The kilns will be connected to electrical precipitators and 100-ft. stacks. Pneumatic conveying systems will carry the finished cement to the fifteen 13,000-bbl. cement storage silos. The four bag packers will have a combined capacity of 1,200 bbls. per hour. All construction work is being done by the Walsh Construction Company and Ralph E. Mills, general con-

tractors; and the silos, both raw mix and cement, are being built by the MacDonald Engineering Co.

The Texas plant is identical in all except minor details with the one in Virginia. It will be fired with natural gas instead of coal. All of the work will be done by the Walsh Construction Co. and Gifford-Hill & Company associated as general contractors; and the MacDonald Engineering Co. will build all the silos.

Marquette The Marquette Cement Manufacturing Company made a number of improvements to its various plants during 1950. These have added somewhat to its productive capacity although most of them were intended primarily to increase the efficiency of operations. The most important improvements were made at the Nashville, Tenn., plant where production was increased by about 200,000 bbls. annually. This was primarily a renovation program, but considerable new equipment was added, including a new primary crusher and feeder at the quarry, new motor controls, etc. At the Cowan, Tenn., plant new electric controls, a new power distribution system, and a new secondary crusher were installed, and major improvements were made to the coal-handling system. The Oglesby, Ill., Des Moines, Ia., and Cape Girardeau, Mo., plants were also affected.

Work now in progress or planned for 1951 will add about 1,500,000 bbls. to the productive capacity of the Marquette chain of plants, or about 18 percent of its present output. Several months ago the company announced that the capacity of the Des Moines plant would be increased 50 percent, or about 500,000 bbls. daily. A 475-ft. rotary kiln (originally intended for a cement plant in China) and other related equipment will be installed.

About 1,000,000 bbls. of cement will be produced annually at the new wet process plant which Marquette now has under construction at Brandon, near Jackson, Miss. The equipment will include a 12- by 450-ft. gas-fired kiln. As an adjunct to this project the company is also building a dock at Vicksburg, Miss., with facilities for transferring cement from cars to barges on the Mississippi River.

Missouri The Missouri Portland Cement Company in 1950 put in operation its new plant at Prospect Hill (St. Louis), Mo., which is reported to have a capacity of 6,000 bbls. daily. No details are available on plant equipment, but it is reported to be a modern wet process operation with two kilns.

Monarch The Monarch Cement Company, Humboldt, Kan., during 1950 completed a $1,500,000 rebuilding project which is the first phase of a program to be carried on through 1951. The first phase included the installation of a new 11- by 230-ft. dry process kiln and an air-quenching clinker cooler, both supplied by Allis-Chalmers; a 300-ft. Custodis concrete stack; two new boilers, one for waste heat; coal-handling equipment; and other necessary accessories.

The second phase of the program includes a second 11- by 230-ft. kiln, air-quenching clinker cooler, coal pulverizer, 26,000 lb. per hr. waste-heat boiler, etc. Dust collectors are to be installed in various departments of the plant. The kiln is expected to be in operation by July 1.

North American The North American Cement Corporation is reported to have completed the 4-year improvement program at its Catskill, N. Y., plant which has increased its capacity from 4,000 bbls. to 6,000 bbls. daily. In the first stage of this program a new 10½- by 340-ft. kiln replaced a smaller one. A second new kiln of the same size has now been installed to replace two other small kilns. A 3,000-kv.a. transformer substation replaced the old one, a third preliminary mill was added in the raw department, and other improvements were made.

Northwestern States The Northwestern States Portland Cement Company early in 1950 completed an improvement program at its Mason City, Ia., plant which is said to have affected nearly every department of the plant but which added little to its productive capacity.

Oregon The Oregon Portland Cement Company, which in 1947 increased the capacity of its plant at Oswego, Ore., from 400,000 bbls. to over 1,000,000 bbls. annually, further increased its capacity in 1950 by about 100,000 bbls. annually through the installation of improved kiln burners.

At its Lime, Ore., plant the company during 1950 installed a hammermill operating in closed circuit with a screen to provide for increased slurry production. The increase in clinker production due to this installation is expected to amount to about 100,000 bbls. during 1951.

Peerless The Peerless Cement Corporation has had a rather extensive construction program planned for the years 1950 through 1954. Only a portion of this work has been completed, and the remainder is being done according to schedule. At the Detroit, Mich., plant two new Bradley Hercules mills went into operation in August for the preliminary grinding of clinker. These have materially increased the clinker-grinding capacity. It is planned to build a new concrete kiln stack and install modern dust-collecting equipment early in 1951.

At the Port Huron, Mich., plant Peerless is erecting a new 11- by 400-ft. kiln complete with direct-firing coal mill, Fuller clinker cooler and the necessary dust-collecting equipment. This installation should be ready for operation early in 1951, but the necessary raw-grinding capacity for getting full capacity out of two kilns will not be ready until later in the year. A new concrete stack was also built at this plant.

Pennsylvania-Dixie The Pennsylvania-Dixie Cement Corporation has under way at its Kingsport, Tenn., plant a $3,000,000 expansion and improvement program which will increase its capacity considerably. The major item is a 500-ft. Smidth wet process kiln which will replace the six existing dry process kilns. This work is expected to be completed early in 1951.

The West Winfield, Pa., plant which Penn-Dixie purchased from the West Penn Cement Co. in 1949, has undergone a $1,000,000 improvement program affecting nearly every department of this 1,400,000-bbl. operation. Much of the burning, cooling and grinding equipment was replaced or reconditioned. The Rust Engineering Company built a 175-ft. concrete stack and did much of the other work.

Permanente The Permanente Cement Company, which has seldom let a year go by without making important additions and improvements to its plant at Permanente, Calif., apparently made few important changes there in 1950. During the year, however, it did put in operation a new cement storage and distributing plant at Anchorage, Alaska, to supply the

growing demand in that territory. This plant has storage capacity for 30,000 bbls. of cement and adequate packing facilities. Cement is shipped in bulk from its California plant in the company's bulk cement carrier, the S. S. *Permanente Silverbow*, which also serves the company's facilities in Portland and Seattle, or from the Seattle distributing plant in 15,000-bbl. barges.

During the year the company also reopened its storage and packing plant at Portland, Ore. This has silos with a capacity of 72,000 bbls. of cement, and the modern packhouse has a daily capacity of 48,000 sacks.

Several months ago Permanente announced a $3,500,000 expansion program which will augment its distribution facilities and provide an additional 1,400,000 bbls. of cement annually, an increase of 25 percent over present capacity. A fifth large kiln will be installed at Permanente, along with other related equipment. The present storage and packing facilities at Seattle will also be enlarged.

Ponce The Ponce Cement Corporation early in 1950 completed improvements to its plant at Ponce, Puerto Rico, which considerably increased its capacity at a cost of about $1,000,000. Equipment added included an Allis-Chalmers rotary kiln, an 8- by 40-ft. compeb mill, and a 4½- by 70-ft. clinker cooler.

Puerto Rico Late in 1950 the Puerto Rico Cement Corporation, established by the Puerto Rico Reconstruction Administration in 1939 and taken over by the island's Development Administration in 1942, was sold to un-named private interests. The plant had an original capacity of 350,000 bbls. annually, which was increased to 1,000,000 bbls. during World War II. Government officials announced that the plant was built as a part of a policy to establish new enterprises when private capital available was insufficient and to turn them over to industry when possible. Three other government-owned enterprises were sold at the same time.

Riverside The Riverside Cement Company during 1950 made extensive improvements at all three of its plants. At Oro Grande, Calif., it installed a fourth F. L. Smidth 9½- by 18-ft by 8-in. Tirax air-swept ball mill which replaced the old tube mill installation and brought this plant back to its full production capacity of 3,250,000 bbls. annually. The clinker storage was also enlarged to a total capacity of 250,000 bbls. A contract has been let for the construction of additional cement silo storage for about 120,000 bbls., to be completed in 1951.

At the Crestmore, Calif., plant a modernization program was started in 1950 which included the installation of a kiln feed silo similar to the one at Oro Grande which eliminates all kiln bins. A long-term program for the improvement of the Riverside, Calif., plant is in prospect, but the world situation will determine what can be done during 1951.

During 1950 Riverside also modernized its transportation fleet, adding 18 new bulk-cement hauling units with a capacity of 140 bbls. each. A large percentage of the cement produced in California is delivered in this manner.

St. Mary's The St. Mary's Cement Company has announced a 4-year plan for the expansion and modernization of its plant at St. Marys, Ont., Canada which may, however, be retarded by the frequency conversion of electric power in western Ontario. A new kiln with a capacity of 720,000 bbls. annually went into production in the spring of 1949. A third kiln of the same capacity is scheduled to go into operation early in 1952. New crushing and grinding equipment being installed is expected to be ready early in 1951. Before these installations the capacity of the plant was 660,000 bbls. annally and on completion of the program in 1952 it will be 2,100,000 bbls. annually.

South Dakota The completion of an extensive expansion and improvement program at the South Dakota Cement Plant, Rapid City, S. D., more than doubled the original capacity of 2,000 bbls. daily. This excellent wet process plant has the distinction of being the only state-owned and operated plant in the United States. Nearly every department of the plant was affected by the expansion, yet the work was done with little delay to the operation of the existing equipment. In the raw department the existing two-compartment mills were converted into finishing tube mills and new preliminary raw mills were installed. The two original 10- by 150-ft. kilns were supplemented by a new 11- by 375-ft. Allis-Chalmers kiln, complete with new slurry blending and feed tanks, coal mill, waste heat boiler and air-quenching clinker cooler. No changes were made in the clinker-grinding department, but ten new cement storage silos with a capacity of 10,000 bbls. each and a new packhouse with two packer circuits were added. A new crushing department is to be built in 1951, and the present setup will then be used for shale crushing. The MacDonald Engineering Co. designed these improvements and supervised construction and installation.

Spokane The Spokane Portland Cement Company, which in 1949 executed a part of a $300,000 expansion and improvement program at its Irvin, Wash., plant, completed this and made other changes in 1950. This program included a new finish-grinding tube mill in a new building adjacent to the plant, and with it a Norblo bag-type dust collector. This installation resulted in a 20 percent increase in output. The old mill is being kept as a standby for emergency use. To meet the added power requirements the company has installed three transformers in a new outside substation.

Later in 1950 the company completed the installation of a new 100,000-c.f.m. Western Precipitation Corp. Cottrell dust precipitator and a Rust 80-ft. reinforced concrete stack for the kilns. The precipitator is so designed that other sections can be added in the future if necessary. It is preceded by Buell mechanical collectors. The combination is reported to be collecting 99.6 percent of the stack dust.

During 1951 the company plans to make improvements in its rock unloading and cement loading facilities. There is also the possibility that a decision may be made to make more extensive improvements which would add 2,000 bbls. daily to the capacity of the plant.

Superior We have no information that the Superior Portland Cement Company made any important changes in 1950 to its plants at Concrete and Seattle, Wash., nor that any are to be made during 1951. The company did, however, make an important addition during the year to its facilities by building a new dock and distributing plant at Seward, Alaska. No details are available except that the cement is pumped from boats either into storage or direct into railroad cars. Barge shipments are also being made.

(*Continued on page 122*)

Production Increased in 1950

Survey shows sand and gravel output up 8 percent; stone increased about 5 percent.

By WILLIAM M. AVERY

REFLECTING the high level of expenditures for new construction in 1950, the output of sand and gravel and crushed stone for the year probably reached new peaks for both industries. A direct mail survey conducted by PIT AND QUARRY, covering production, prices, wages, and other pertinent data for the first ten months of the year, indicates that sand and gravel output increased approximately 8 percent, and that crushed stone production was up about 5 percent over the corresponding period in 1949.

Data were received from plants which accounted for almost 6 percent of sand and gravel production last year, and approximately 8½ percent of the crushed stone produced. Based on the increases shown by the reporting group, the 1950 productions of the sand and gravel and crushed stone industries were respectively 345,000,000 short tons and 234,000,000 short tons.* Comparable figures for 1949, as released several months ago by the Bureau of Mines, show sand and gravel production of 319,104,000 tons and crushed stone production of 222,408,140 tons.

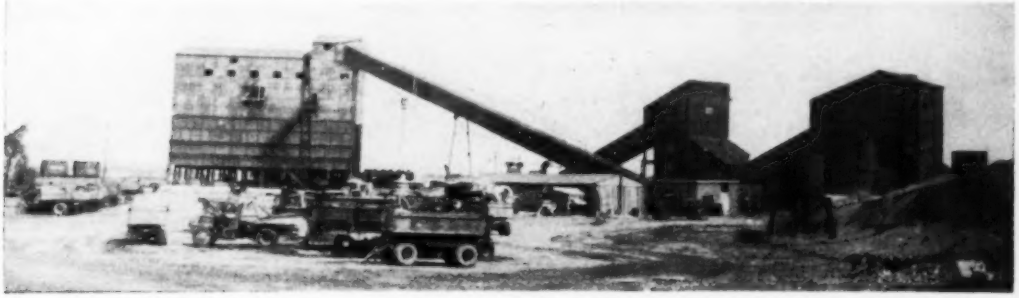
• The new screening and batching plant of Albuquerque Gravel Products Co., Albuquerque, N. M. The excavating unit is a 4-cu. yd. drag scraper operating on a 500-ft. span.

*The total for crushed stone does not include stone used in the production of open-market lime and cement, asphaltic stone, and slate used for granules and flour.

Sand and Gravel

The PIT AND QUARRY survey indicates increases in sand and gravel production in all parts of the country. Eastern producers in the reporting group showed an average increase of almost 12 percent over 1949. The West and South were next, with increases of 9 and 7 percent, respectively, whereas the Midwestern group showed a production rise of only 4 percent. Although a few producers in each section reported lower volume in 1950 than in 1949, the losses were in most cases very small and were readily offset by the relatively large gains experienced by others.

Although insufficient data were submitted to permit a state-by-state comparison of production in 1950, such information as is available indicates that the pattern was little changed from the preceding year, when the top producers were California, Michigan, New York, Illinois, Wisconsin, Texas, Ohio, Minnesota, and Pennsylvania in that sequence. In 1949 each of these states report-



• A general view of the Edward C. Levy Company's new slag processing plant at Detroit, Mich. Buildings from left to right house respectively the screens and bins, the primary crusher, and the three secondary crushers.

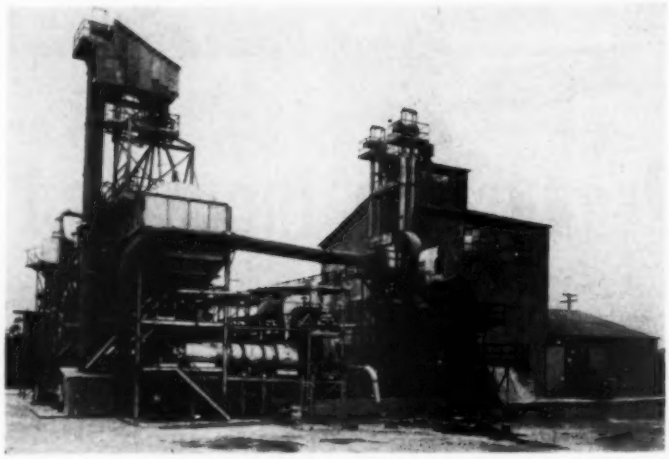
ed output in excess of 11,000,000 short tons, with the entire group accounting for about 51 percent of total production.

Selling Price The average f.o.b. selling price as reported by producers increased from $1.07 per ton on January 1 to $1.09 per ton on November 1, a rise of less than 2 percent. Most of this modest increase came from producers in the Midwest (where the average reported selling price went from $0.90 to $0.93 per ton) and the West (where the average increased from $1.26 to $1.30 per ton.)

Prices reported by Southern producers increased from $1.17 per ton on January 1 to $1.18 per ton ten months later, an increase of less than 1 percent. Data submitted by Eastern producers showed no change in the average selling price of $1.21 per ton.

Wages Between January 1 and November 1 average wages among the reporting group increased from $1.24 per hour to $1.32 per hour, a rise of about 6½ percent. On a geographical basis the pattern of increases was as follows: Midwest, from $1.19 to $1.28 per hour, or about 7½ percent; East, from $1.31 to $1.35, or 3 percent; South, from $0.94 to $1.04, or 11 percent; West, from $1.42 to $1.50, or 5½ percent.

Except in the South, where some producers reported wages of less than 75 cents per hour on January 1, there was no clear indication that the increases were directly due to the higher minimum wage requirements which went into effect during the year. In any case, none of the companies that submitted information showed an average wage of less than 75 cents per hour on November 1, and the vast majority, as indicated by the averages, were well over the minimum requirement.



• A general view of the Great Lakes Carbon Corporation's Permalite plant at Torrance, Calif.

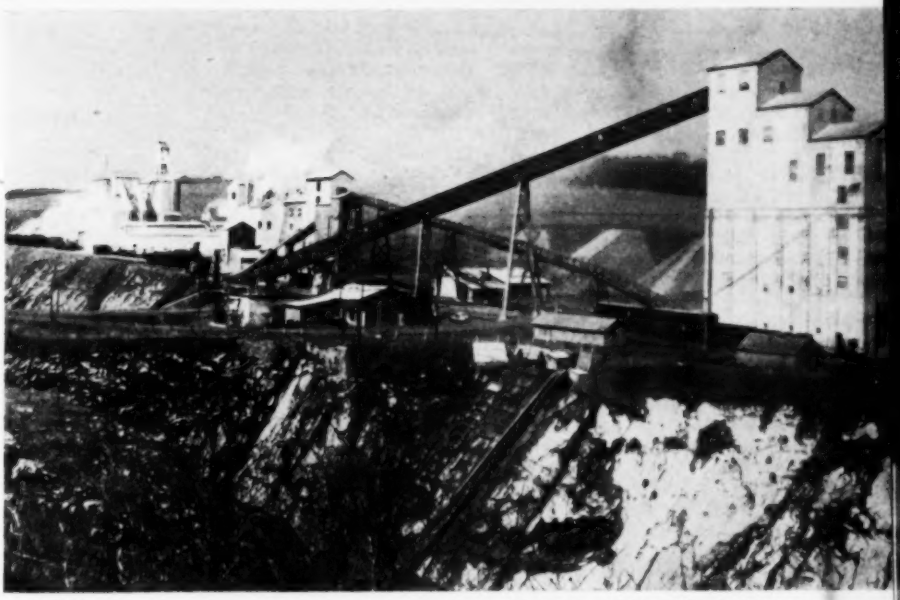
Production Costs Increased production costs for the entire reporting group averaged about 5 cents per ton, or 3 cents per ton more than the average increase in selling price. This finding was surprisingly uniform in all sections of the country. About one producer in four reported that his cost of production in 1950 was at the same level as in 1949, and only one in eight reported small reductions, gained in most cases by installing labor-saving equipment.

Productive Capacity As a means of gauging the growth of the industry, the survey questionnaire asked producers to indicate their hourly productive capacity on January 1 and November 1. The average increase for the reporting group over this period was about 8 percent — from 201 t.p.h. to 216 t.p.h. Since only about one plant in five reported having made any increase in productive capacity, it follows that fairly large increases were made in order to pull the average for the entire group up by 15 t.p.h.

Midwestern producers, who accounted for almost half the total capacity reported, showed an increase from an average of 202 t.p.h. to 207 t.p.h. or about 2½ percent. In the East the average jumped from 231 to 259 t.p.h., in the South from 106 to 121 t.p.h., and in the West from 216 to 242 t.p.h. These increases amount to about 12 percent for the East and the West, and approximately 14 percent for the South.

Outlook In regard to the outlook for their materials in 1951, our informants were surprisingly op-

• Quarry view of the Iafolla Construction Co., with the 300-t.p.h. crushing and screening plant in the background.



This general view of the Annville plant of H. E. Millard Lime & Stone Co. shows the new washing plant on the right, the old screening and washing towers in the center, and the burning plant and finishing section at the left.

timistic. At any rate almost 30 percent ventured to predict that their volume of business would show an increase over 1950; 20 percent thought it would be about the same; 17 percent foresaw moderate reductions; and about 34 percent indicated in one way or another that our guess would be as good as theirs.

Among the group that predicted increases only about half indicated the amount of the expected rise. These estimates ranged from 5 percent to 25 percent, with 10 percent representing an approximate average. Most of the conservative group thought that their volume might drop as much as 20 percent in 1951.

It seems probable that any prediction regarding future business by an individual company represents at best only an intelligent guess, rather than an estimate based upon careful market analysis. Just a year ago PIT AND QUARRY sent a similar questionnaire to sand and gravel producers and over 35 percent of the replies referred to the probability of a drop in 1950 volume. Although there is no way of determining if the same group replied to the 1950 questionnaire, and therefore no possibility of making a direct comparison between forecast and actuality, it seems quite obvious that most of the replies erred on the conservative side. If this is characteristic of the industry as a whole, and we believe it is, the predictions regarding 1951 may surely be interpreted as indicating that sand and gravel operations will continue at rates very nearly equal to those that prevailed throughout 1950.

This conclusion is borne out to some extent by the rather surprising number of producers who indicated that they will expand their capacity in 1951. Almost 25 percent of the replies referred to definite plans for effecting some increase in capacity during the coming year. The proposed increases ranged in general from 10 percent to 50 percent.

CRUSHED STONE

According to the Bureau of Mines, the output of crushed and broken stone in 1949 was 222,408,140 tons, a decrease of 1 percent from 1984. PIT AND QUARRY's estimate of 234,000,000 tons produced in 1950 is based on a straight projection of the indicated 5 percent increase determined from the questionnaire returns.

Midwestern producers, who accounted for almost a third of the total tonnage covered by the returns, showed an increase of over 6 percent in production for the first 10 months of 1950. An even larger increase (almost 9 percent) was shown by Eastern producers, this group comprising over 40 percent of the total tonnage reported. These gains were offset to some extent by the showing in the South, where the reporting group indicated virtually no change in production for the first 10 months of 1950, as compared with the corresponding period in 1949.

In 1949 Pennsylvania, with a production of 21,226,480 tons, led all the states. Ohio, Illinois, Michigan, New York, and California, each with a production of over 10,000,000 tons, followed in that order. The survey returns indicate that these six states were again the top producers in 1950, with a strong possibility that Missouri may have joined the over-10,000,000-ton group.

Selling Price Information on selling price compiled from the survey returns shows remarkable stability over the 10-month period covered. Average f.o.b. selling price for the entire group which submitted information increased from $1.42 per ton on January 1 to $1.43 per ton on November 1, a rise of less than 1 percent. Except for the East, where the average advanced from $1.45 per ton to $1.49 per ton, all other areas showed virtually no change. Midwestern producers reported an average selling price of $1.45 per ton, as compared with $1.37 per ton for Southern producers. In this and in most other categories covered by the survey, Western producers failed to submit sufficient data to justify projection.

The crushed stone industry's 1949 production was valued at $289,700,000, or about $1.30 per ton, according to the Bureau of Mines report. Based on the same unit value, and an estimated 234,000,000 tons produced, the industry's 1950 output had a probable value of about $305,000,000.

Wages Average hourly wages in the industry advanced about 7 percent between January 1

and November 1, according to the survey information. The average for the reporting group increased from $1.16 per hour to $1.24 per hour during the 10-month period covered.

In the Midwest the average went from $1.21 to $1.25 (up 3½ percent), in the East from $1.28 to $1.44 up 2½ percent), and in the South from $1.01 to $1.08. The Eastern average of $1.44 per hour on November 1 may be somewhat excessive due to the fact that a disproportionate number of large producers returned the questionnaires. A similar survey covering 1949 production showed an average hourly wage of $1.18 among the Eastern plants, and it seems unlikely that there could have been an increase of 10 cents per hour between November 1, 1949 (the date covered by the earlier survey), and January 1, 1950.

Production Costs Most of our informants reported higher production costs in 1949.

The average increase for the entire group was a little over 6 cents per ton. When studied on a geographical basis, production cost data showed remarkably little variation, none of the areas covered deviating more than 1 cent per ton from the over-all average.

Detailed study of individual questionnaires suggests that many producers absorbed a major portion of the cost increase by holding their selling price at or very near the level that prevailed toward the close of 1949. In most cases the same producers showed substantial increases in production to offset the apparent drop in profit margins.

Productive Capacity Average productive capacity among the reporting plants increased about 9 percent from January 1 to November 1—from 262 t.p.h. to 287 t.p.h. It would be a mistake, however, to regard these figures as indicating true average plant capacities for the entire industry, again for the reason that so many high-capacity plants were included in the Eastern group.

In the Midwest the reporting plants showed an increase in productive capacity from 188 to 200 t.p.h. (about 6½ percent), in the East from 580 to 625 t.p.h. (almost 8 percent), and in the South from 167 to 195 t.p.h. (about 17 percent). This relatively large increase among Southern producers is a little hard to reconcile with the fact that 1950 production in the area showed no increase over 1949, but it no doubt reflects the increased pace of industrial development in that section of the country.

Outlook On their prospects for 1950, crushed stone producers seemed to be even more bullish than their counterparts in the sand and gravel industry. Thirty-seven percent of the entire reporting group thought that demand for their materials would increase in 1951, their estimates ranging from 10 to 30 percent, with 15 percent representing an approximate average. Almost 25 percent of our informants took the opposite view, predicting that volume would be off at least 20 percent in 1951. Of the remainder, 23 percent thought their production would be about the same as in 1950 and 15 percent shied away from the question altogether.

On the closely related question regarding plans to increase plant capacity in 1951, only 15 percent of the reporting companies indicated having such plans, and few of this group mentioned the extent of their proposed expansion programs. Over 5 percent of all replies referred to definite or tentative plans for building entirely new plants in 1951.

BLAST FURNACE SLAG

Although slag production was not covered in the PIT AND QUARRY survey, it seems virtually certain that the output of the material set a new record in 1950. A canvass conducted last year by the National Slag Association in cooperation with the Bureau of Mines showed 1949 production of 21,581,379 tons valued at $24,578,712. With additional tonnage from several large new plants which were in production in 1950, total output for the year must have reached at least 22,000,000 tons, which would represent an increase of only 2 percent from the previous year.

The slag processing industry's 1949 production included the output of 66 plants (41 companies) processing air-cooled slag and 10 plants (7 companies) processing expanded slag. Screened air-cooled slag accounted for 17,769,330 tons of the total, unscreened air-cooled slag for 727,595 tons, granulated slag for 1,885,428, and slag processed for lightweight aggregate for 1,199,026 tons.

As a direct result of the prolonged steel strikes in 1949, the output of expanded slag in that year was about 11 percent below the total for 1948. This loss was undoubtedly made up in 1950, and in all probability the production for the year was somewhat higher than in 1948.

LIGHTWEIGHT AGGREGATES

Because of the rapid expansion of productive facilities in recent years, it has been impossible to develop any reliable statistical data on the production of lightweight aggregates. The problem of gathering data is complicated considerably by the multitude of types of material produced, by the extremely varied processing methods employed, and by the wide range of uses developed for the various materials.

As the largest single consumer of lightweight aggregates, the concrete masonry unit industry is probably the best available indicator of production. A survey of this industry by PIT AND QUARRY late in 1950 suggests that its output for the year totaled approximately 1,400,000,000 8- by 8- by 16-in. equivalents. About 48 percent of this production, or roughly 670,000,000 units, was classified as lightweight. Using the generally accepted ratio of 50 units per cu. yd. of lightweight material, it would appear that the block industry alone must have consumed close to 13,400,000 cu. yds. of lightweight aggregate in 1950.

The use of the material in other precast concrete products, as well as in monolithic concrete and plastering, probably brought total consumption to something like 18,000,000 cu. yds.

1950 Construction Review

(*From page* 101)

VERMONT—During 1950, on Vermont's state highway system, the department commenced Federal Aid and state construction projects totalling 17 miles at an estimated cost of $2,436,780. On secondary (non-state) highways, 11 miles of Federal Aid secondary projects were commenced at an estimated cost of $611,658. Actual expenditures of state and Federal Aid construction money in Vermont from January 1 to December 1, 1950, amounted to $1,910,131.70.

For 1951 the present program contemplates commencing about 33 miles of Federal Aid primary projects (on state highways) at an estimated $2,063,990; 20 miles of Federal Aid urban and secondary projects (on non-state highways) at an estimated $2,187,300.

A. W. Coleman,
Traffic & Public Relations Engineer

(*Continued on page* 122)

Output in 1950 Generally Gained

Increases in production enabled industries to regain modest losses suffered in 1949.

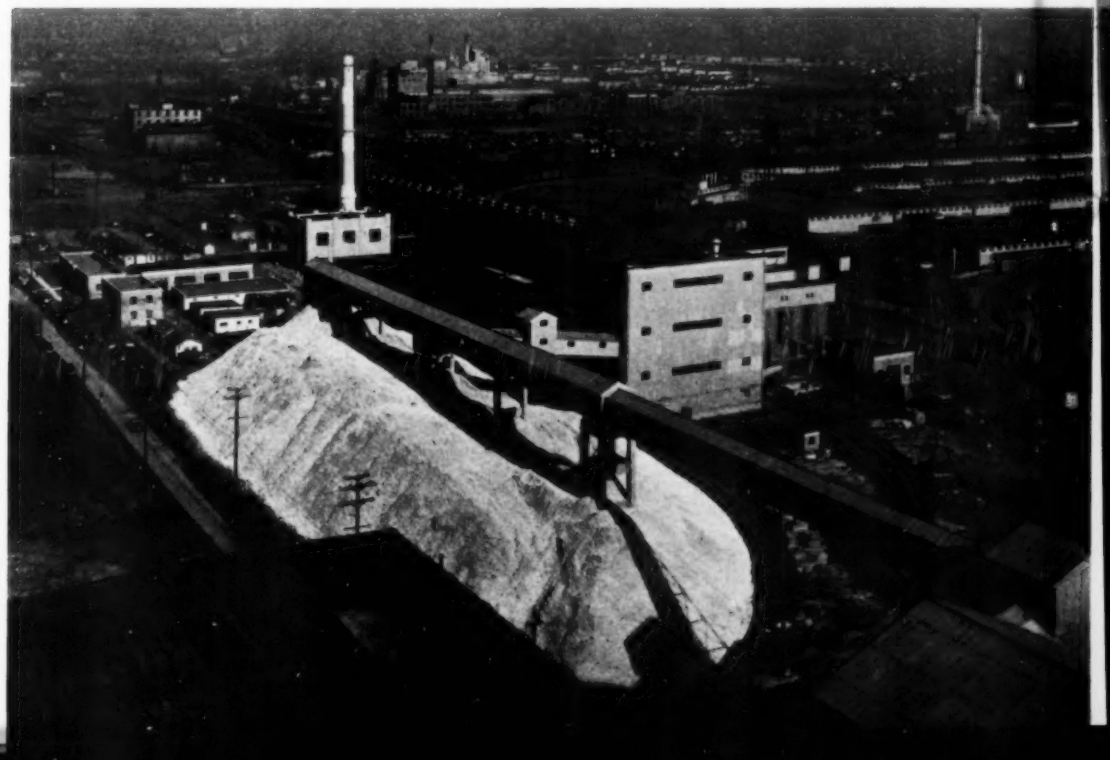
FROM every available indication, 1950 was a busy and prosperous year for most producers of nonmetallic minerals. Tremendous activity in the construction and industrial fields throughout the year created heavy demand for most nonmetallics, and as a result it seems likely that total production and use was comparable to the record level set in 1948.

No actual total production figures are available at this writing, but partial data for the first half and, in some instances, for the first three quarters, on a few key materials indicate that most of the losses which occurred in 1949 were wiped out. The following detailed report is in the main a summary of 1949 data on production, sales, value, and other significant developments in the nonmetallic minerals industries. Under the various material headings, however, are included such data or indications of 1950 performance as are now available. Production statistics on the cement, sand-and-gravel, crushed stone, slag and lightweight aggregate industries are reported elsewhere in this issue.

Viewed in retrospect, it is now quite clear that 1949 marked a leveling off period in the production of most of the nonmetallic minerals. Although a few held the very high levels of production attained in 1948, or scored modest increases, production in general was down 7 or 8 percent. It must be remembered, however, that many of the materials among the group which showed losses were produced in record-breaking quantities in 1948.

Among the factors which contributed to production cutbacks in 1949 were the sharp (though brief) business recession experienced early in the year, and the costly shutdowns in coal and steel production due to strikes. The fact that none of these retardants was in evidence in 1950 affords every assurance that in the year just ended production among most of the nonmetallics group must have closely approximated the excellent showing in 1948.

Lime In the absence of final Bureau of Mines figures, it is somewhat difficult to speculate on the 1949 production of open-market lime. For 1948 the Bureau reported a record total of 7,263,976 tons, a 7 percent increase over the previous high of 6,778,979 tons reported in 1947. Members of the National Lime Association reported shipments in 1949 up about 6 percent over



• National Gypsum Company's fine plaster and board plant at Baltimore, Md. About 60,000 tons of crude gypsum is stored in the open pile in the foreground.

1948, at least suggesting the possibility that the industry may have shown a small increase in total production in 1949.

Production of lime for each of the major uses except agricultural showed increases in 1948. Quicklime, which comprised about 75 percent of total sales, was up 8 percent over 1947, and hydrated lime showed a 4 percent gain. The number of active open-market lime plants increased from 179 to 181.

In the year just ended it seems virtually certain that lime production reached a new high. Shipments by members of the National Lime Association for the first 8 months of the year were about 11 percent over the corresponding period in 1949, and shipments in the months of May, June, July, and August were approximately 20 percent over the same months in 1949. The very high levels of construction and industrial activity that prevailed throughout the year suggest that the entire lime industry must have operated at peak or near-peak capacity to keep up with demand. Total open market lime production for 1950 must therefore have been very close to 8,000,000 tons.

During 1950 PIT AND QUARRY published several articles on important plant expansion programs in the lime industry. The H. E. Millard Lime and Stone Company of Annville, Pa., completed during the year a vast expansion program which was launched in 1946. This program included major work in the quarry, the installation of a new 8- by 317½-ft. F.L. Smidth rotary kiln, and finally the construction of an entirely new plant for washing, screening, and secondary crushing. The increase in capacity thus effected at the Annville plant, combined with the output of other Millard properties located at Hershey and Palmyra, Pa., brings the company's total production of high-calcium lime and limestone products, to well over 5,000 tons daily.

Early in 1950 Buckite Refractories, Inc., of Woodville, O., fired up a new 8½- by 160-ft. Traylor rotary kiln, completing a major expansion program which was launched early in 1949. The new kiln, somewhat larger than the two older units which formerly comprised the burning plant, has increased Buckite's total production of dead-burned refractory dolomite by 60 to 65 percent, or approximately 125 tons per day.

Agricultural Limestone Based on figures assembled from various sources by the National Agricultural Limestone Association, the total use of agricultural liming material in 1949 amounted to 27,901,969 tons, an increase of almost 9 percent from the 25,686,416 tons used in 1948. Sources used in compiling these totals included the U.S. Department of Agriculture, state departments of agriculture, county agents, and individual producers.

The five ranking states (Illinois, Iowa, Missouri, Ohio and Indiana, in that order) were the same in 1949 as in 1948. Of the 40 states covered in the compilation, 31 showed increases in 1949, as compared with 1948. Losses, in most cases relatively small, were shown in California, Illinois, Kansas, Louisiana, Maryland, Michigan, Mississippi, New Jersey, and Oregon.

It seems doubtful that there could have been a substantial increase in the use of agricultural liming material in 1950. Long rainy seasons which were experienced in many areas, coupled with an unusually early onset of severe winter weather, may actually have brought about a slight decline. It is expected that 1951 tonnage will equal or slightly exceed the 1949 figure, although transportation may prove to be a serious problem if the national economy is geared to an all-out war effort. The severe shortage of hopper cars has already brought about a substantial increase in the tonnage of liming materials shipped in bags.

• A view of the three rotary kilns which now comprise the burning plant of Buckite Refractories, Inc., at Woodville, O. The new 8-ft. 6-in. by 160-ft. unit, which was installed early in 1950, is at the right.

Gypsum In 1949 domestic mine production of crude gypsum totaled 6,491,098, short tons, the second best year on record and a decline of only 8 percent from the all-time high of 7,044,447 short tons established in 1948. Imports totaled 2,593,329 short tons, or 9 percent less than the record 1948 figure. Early 1950 reports, however, indicate that the 1950 production may surpass even the 1948 record total, as building activity gained rapidly in the first part of the year.

In 1949 the apparent supply of gypsum was calculated as 9,084,427 short tons. The total production of calcined gypsum reached 5,664,551 short tons, a 9 percent reduction from 1948.

Sales of most important gypsum products were also less in 1949 than in 1948, with notable decreases in the sales of lath, sheathing, and plasters. However, sales of these products in the first part of 1950 were rapidly increasing, reflecting the increased level of building and industrial activity. Some shortages were beginning to develop.

Of the 64 active domestic mines producing gypsum in 1949, 40 were

open-pit operations, 17 were underground, and 7 were combinations of the two types. Improvement in labor and supply conditions, increased mechanization, expansions, and the development of new deposits kept productive capacity at a high level, enabling the industry to respond readily to increases in demand, such as were encountered in the first part of 1950.

Booming construction and extraordinary demand made 1950 a peak year for gypsum production. The first 9 months saw 5,674,415 short tons produced, an increase of 23 percent over 1949. During the third quarter a new peak was reached, with 2,199,260 tons mined—the largest tonnage ever reported for any three-month period.

Use of gypsum in agriculture and some minor uses declined, but all other uses were up, with the greatest increase appearing in the lath, wallboard, and insulating fields, where tonnage was up about 30 percent. In any case it would seem that the trend toward use of more gypsum products in the construction field will continue, but it does not appear that this will offset a substantial reduction in new construction. With the announced intention of the government to curb building by one-third in 1951, the outlook for this field is uncertain. Probably moderate declines will occur in gypsum production once inventories are reestablished in the building products field.

Phosphate According to reports submitted by producers to the Bureau of Mines, 8,877,474 long tons of phosphate rock was mined in the United States in 1949, a drop of almost 5 percent from the record high of 9,388,160 long tons set in 1948. Decreases shown in Florida and Tennessee were offset to some extent by a sizable increase in the mine production of Western rock.

Notwithstanding the drop in mine production, the quantity sold or used increased from 8,668,769 long tons in 1948 to 8,986,933 tons in 1949, decreased sales of Idaho and Wyoming rock having been more than compensated for by increases in Florida, Tennessee, and Montana. The total value of phosphate rock sold or used in 1949 increased to $51,415,027 and the P_2O_5 content of the rock sold or used set a new record high of 2,913,796 long tons.

Apparent domestic tonnage consumption showed a slight increase in 1949 to 7,735,005 long tons, and stocks at the close of the year showed a sharp decline. Exports and imports showed increases in both quantity and value in 1949.

● A general view of the new flotation plant of the Feldspar Flotation Corporation at Spruce Pine, N. C.

Potash A strike in the potash mines of the Carlsbad district of New Mexico in November and December, 1949, caused a slight reversal in the long upward trend of the production and sales of the potash industry of the United States. According to reports by producers to the Bureau of Mines, the production of marketable potassium salts dropped to 2,056,609 short tons, a decrease of 81,884 tons from the 1948 peak of 2,138,493 tons. The equivalent K_2O content (1,120,653 tons) was 22,686 tons lower. The total value of the sales ($35,105,799 in 1949) was nearly $900,000 less than in 1948, but the average value per ton of the potassium salts sold in 1949 was $0.27 more. Stocks in producers' hands at the end of 1949 reached a new low figure of 9,066 tons K_2O. Both imports and exports declined in quantity and value in 1949 from 1948. Apparent domestic consumption of potash (K_2O) in 1949, (1,070,312 tons) was 30,475 tons below the 1948 figure.

The Western states remain the dominant factor in the domestic production of potash. California, New Mexico, and Utah yielded virtually all of the 1949 output, the largest part coming from the deeply buried deposits of sylvite and langbeinite, of Permian age, in the Carlsbad region of southeastern New Mexico. The eastern United States supplied only a small quantity—from Maryland, Michigan, and Pennsylvania.

Bauxite According to Bureau of Mines figures, U.S. production of bauxite in 1949 amounted to about 1,139,115 long tons, a 22 percent decline from the preceding year. Almost 95 percent of this output was from mines in Arkansas. Total imports for the year amounted to 2,414,220 tons, only 3 percent below 1948, as compared with the much greater loss in domestic production. Production of bauxite at the mines totaled 96,873 long tons during the first nine months of 1950. This is an increase of about 18¾ percent over the same period a year ago, but less than the record production of 1948 for the same period. It appears that final figures will show a production of nearly 1,300,000 long tons for the year. Inasmuch as imports of bauxite are currently running about twice the annual mine production, it would seem that there is room for expansion, provided prices and costs keep in line. The reopening of large aircraft plants, and a demand for re-armament aluminum, which is already showing up in civilian cuts, makes 1951 look exceedingly bright for this industry.

Sulphur Native sulphur production reached all-time peaks in 1950. Largest total tonnage for the first nine months, as well as largest monthly tonnages for several individual months, were established. Producers' stocks on hand declined toward the end of the year, and at the close of the year amounted to less than six months' supply. It appears that use of sulphur is climbing faster than production, as shipments are cutting into stockpiles. The first nine months of 1950 saw a production of 3,892,363 long tons, an increase of more than 9 percent over the same period a year earlier. If the trend of increase continues in 1951, another record year will be established. The close association of sulphur with war production makes this seem certain.

At the close of 1950 stocks of sulphur on hand at the mines were expected to be around 2,300,000

tons, or about half the amount available at the beginning of World War II. Current production is little more than adequate to take care of U.S. needs, whereas exports, under the pressure of E.C.A. demands, have jumped to over a million tons annually. The shortage may be eased somewhat late in 1951 by production from a new deposit belonging to the Texas Gulf Sulphur Company, but it seems almost inevitable that some sort of allocation system will have to be adopted. One large producer has already made a 20 percent reduction in allotments to its customers.

Clay Total clay production decreased 7 percent in 1949, as compared with 1948, according to reports by producers to the Bureau of Mines. Although most of the uses of clays showed declines in tonnage, several registered gains over 1948. Among those showing increases were linoleum, 5 percent; enameling, 6; portland and other hydraulic cements, 4; and rubber, 17 percent. Refractories decreased 20 percent; potters, 17, paper filler and coating, 13, rotary drilling mud, 10, filtering and decolorizing oils, 7, and heavy clay products, 6 percent.

Sales of kaolin and ball clay declined 10 and 17 percent, respectively, in 1949, as compared with 1948. Kaolin was consumed chiefly in four fields—paper (54 percent of the total sales), rubber (14), pottery (9), and refractories (9). Decreases in kaolin consumption in 1949, as compared with 1948, were reported for high-grade tile (24 percent), whitewares and refractories (17 each), and paper (13); consumption in rubber increased 12 percent. Ball clay was used chiefly in whiteware (78 per cent of the total sales), and high-grade tile (11 percent). Use of ball clay in whiteware declined 20 percent, but high-grade tile and enameling requirements were larger.

After 11 years of constantly increasing output, the production of bentonite decreased 6 percent in 1949, as compared with 1948, the peak year. Use as foundry sand bond fell off sharply, and rotary drilling mud showed a moderate decrease; filtering and decoloring uses were 5 percent greater than in 1948.

Output of fuller's earth decreased 6 percent in 1949. The chief uses of fuller's earth were for filtering and decolorizing of oils, as an absorbent for oily or greasy floors, in insecticides, and as rotary drilling mud. Use in filtering and decolorization declined substantially but the quantities consumed in insecticides and rotary drilling mud were larger than in 1948.

Due to the reduction in demand for refractories, output of fire clay in 1949 declined 13 percent from the peak year 1948. Consumption of fire clay for all refractory purposes decreased 20 percent and for firebrick and block 21 percent. Several of the smaller refractory and nonrefractory uses, however, were larger in 1949 than in 1948. These included rubber, linoleum, and glass refractories. Fire clay consumed in heavy clay products was only 1 percent less than in 1948.

Asbestos The production of asbestos in the United States in 1949 set a new record of 42,918 short tons, according to the Bureau of Mines. This represented an increase of about 15 percent over 1948. Imports, amounting to 515,303 tons, were down over 20 percent due largely to the long strike which disrupted Canadian production.

Although statistics on 1950 production are not available, it seems likely that both domestic output and imports were higher by perhaps 15 or 20 percent than in 1949. There was news during the year of intensive development activity in connection with what may prove to be the largest asbestos deposit of its type in the United States. The deposit, a chrysotile formation containing an excellent grade of spinning-grade fiber, is located in Shasta County; north of Redding, Calif. It is being developed by Johns-Manville Company. Several independent operators are also reported to be undertaking preliminary development of both chrysotile and amphibole deposits located in northern California.

Roofing Granules The production of roofing granules in 1949, as reported by producers to the Bureau of Mines, amounted to 1,354,205 short tons, valued at $19,978,574—a decrease of 9 percent in quantity and 5 percent in value, as compared with 1948. The production of brick granules decreased 33 percent; natural, 21 percent; and artificially colored, 2 percent. Although the output of all types of granules decreased in 1949, the average value for natural increased 21 cents to $8.75; artificially colored, 34 cents to $16.86; and brick, 42 cents to $17.12. The average value for all types of granules in 1949 was $14.75, as compared with $14.12 in 1948.

Dimension Stone Dimension stone (exclusive of slate) sold or used by producers in 1949 totaled 1,618,430 short tons, valued at $51,746,125, representing a 3 percent drop in quantity and an increase of 8 percent in value, as compared with 1948. Sales of dimension stone used as building stone totaled 11,890,440 cu. ft., valued at $29,910,439—a drop of 6 percent in quantity, but an increase of 20 percent in value. Rubble, which is not included in the total for dimension stone, increased 23 percent in quantity and 24 percent in value, as compared with 1948. Sales of stone for monumental purposes amounted to 3,125,300 cu. ft., valued at $18,757,859, as compared with 3,724,250 cu. ft., valued at $20,541,071 in 1948.

Paving block sales dropped 30 percent in quantity and 17 percent in value, while curbing sales dropped only 4 percent in quantity and *increased* 22 percent in value. Sales of stone for flagging showed an increase of 7 percent in quantity and 11 percent in value.

Abrasive Materials The output of pumice and pumicite established a new record in 1949, and production of diatomite increased somewhat over the high level of 1948. Sales of tripoli and emery were down somewhat, and quartz, grindstones, and garnet decreased substantially. Production of silicon carbide rose 7 percent to the highest level since the record year 1943, while production of aluminum oxide and shipments of metallic abrasives were 19 and 29 percent, respectively, below 1948.

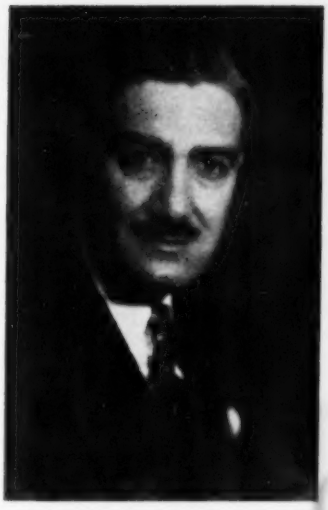
Other Nonmetallics Total salt production in 1949 was about 5 percent below the record level of 1948. Domestic output of slate in 1949 amounted to 740,260 short tons, valued at $12,164,276, these totals representing decreases of 7 percent in tonnage and 6 percent in value.

Sales of both natural sodium carbonates and sulphates declined sharply in 1949, reversing a trend of several years' duration. Soda ash sold or used by producers totaled 200,496 short tons, valued at $4,163,714, as compared with 288,769 tons, valued at $6,623,280 in 1948. Sales of bromine compounds showed a substantial increase, totaling 104,835,602 lbs., valued at $16,267,908.

(*Continued on page 122*)

National Slag Association Holds 33rd Annual Convention At Washington

By JOHN R. DUBLE



C. A. Barinowski, N.S.A. vice-president.

THE Wardman Park Hotel in Washington, D.C., was the scene of the 33rd annual convention of the National Slag Association on November 29 and 30, 1950. After President E. L. Flad had delivered the welcoming address, Edward Bauman, managing director of the association, presented his annual report to the members, discussing in detail certain subjects pertinent to the members' individual and collective interests. He stated that at the present time the association can claim the highest membership in its history, with 25 member companies, one associate member, and one contributing member enrolled. He pointed out that although a majority of the slag producers are now members, there are a few companies still not affiliated with the association; and he expressed the hope that the membership committee would in the future be able to make these companies active members. He further stated that the association is now in a very strong financial position.

E. L. Flad, N.S.A. president.

"Because of this favorable fiscal position and high rate of membership," stated Bauman, "we have been able to operate over the past few years with an increased budget and yet without increasing the overall annual dues of the individual members."

The *Slag Runner* will continue as the official publication of the association. Each member company has been requested to prepare and submit at least one good article annually on some phase of slag use or behavior, in order to enhance the value of this publication. Also discussed was the preparation of a pamphlet, now in rough form, entitled *Properties of Slag Concrete Masonry Units.* The rough draft has been submitted to the problems committee for review, and is considered the No. 1 assignment at present for the association.

Mr. Bauman also revealed during his report that the Standard Commodity Classification set up by the Bureau of the Budget now recognizes slag as a mineral aggregate. This is of special interest in view of the fact that this committee did not at first so recognize slag.

"I call attention to this," Mr. Bauman said, "because, for the first time to my knowledge, blast furnace slag is definitely 'spelled out' as belonging under the classification of a non-metallic mineral. Some of you will recall our interest in attempting to have blast furnace slag included in the non-metallic minerals for percentage depletion. Our difficulty in working with the Ways and Means Committee, which considered the matter of percentage depletion, was in convincing them that slag was a mineral, rather than a manufactured product."

He also expressed the belief that

Some of the members of the National Slag Association attending the meeting at Washington.

since slag processors were grouped with mining interests during the last war, the Bureau of Mines will again administer priorities to the industry when they actually go into effect. It will also be necessary for the industry to estimate its steel needs in case a controlled materials plan is enacted.

Fred Hubbard gave a report on *Industry Problems for Research and Investigation Posed by the Users of Slag*. He discussed in some detail the need for information on the characteristics of plastic concrete made from expanded slag aggregates. He also mentioned the progress made in the use of screened, granulated slag used as an aggregate in concrete and went over the encouraging results from various data already obtained.

Three questions were asked by slag users regarding the blending of slag with other types of aggregates. One was concerned with the blending of slag and gravel as coarse aggregate in portland cement concrete; one with the blending of slag and stone as a coarse aggregate; and one with the blending of slag sand and natural sand for concrete. He emphasized the point that producers should continually check their product both at the plant and on the job site. The need for shipping in clean cars was stressed, and members were told how costly such a mistake could be. "Popouts" were mentioned and discussed briefly, with emphasis on the need for control when slag is used in concrete.

At the end of his report, Mr. Hubbard spoke of the Fire Resistance Rating on expanded slag blocks and forms, and of the agricultural slag experiments carried on at three different universities. All have produced promising results.

The members then attended a luncheon presided over by W. E. Bliss, vice-president of the Standard Slag Company. After the luncheon Fred E. Swineford, engineer-director of Macadam Pavements, Inc., presented a color film on flexible pavement construction.

A cocktail party was given on Wednesday evening, followed by the annual banquet, over which C. A. Barinowski presided. After the dinner Mr. Bauman announced that he had been lucky enough to obtain a large piece of slag from the first blast furnace, from which "trophies" had been made up. Each consisted of a small piece of this historical slag mounted on an inscribed plaque. All presidents of the association past and present, as well as all directors, have been presented with one of these awards. In addition, the editors of PIT AND QUARRY and *Rock Products* each received one of these awards.

The final sessions held on Thursday, November 30, were devoted to the business of the association. The new officers elected were as follows: president, E. L. Flad; vice-president, C. A. Barinowski; treasurer, W. S. Shaw; member at large, I. E. McDermut (Illinois Slag & Ballast Co.).

1950 Construction Review

(*From page* 116)

VIRGINIA—During the fiscal year, ended June 30, 1950, 158 construction projects costing around $20,000,000 were completed on the primary highway system in Virginia. The work included 238 miles of new construction.

On the secondary highway system 825 miles were reconstructed and/or hard surfaced. Total cost of this approximated $10,000,000.

As to 1951, substantially the same program will be followed, both as to dollar value and miles of construction.

During 1950 our program was definitely delayed by shortages of cement, steel, and lumber. Near the metropolitan areas, labor shortages proved to be somewhat of a handicap.

The shaky world situation already has caused an increase in prices here in Virginia and, of course, no one can tell where this might end. Presently, prices are running 10 to 15 percent higher than before the Korean war.

R. E. Steele,
Director of Public Information

1950 Cement Review

(*From page* 112)

Universal Atlas The Universal Atlas Cement Company made no major changes in any of its plants in 1950, but devoted its efforts to good housekeeping and producing as much cement as possible to meet the tremendous demand. At one plant the third kiln was rehabilitated, increasing the capacity there about 40 percent. No decision has as yet been announced as to plant expansions or improvements in 1951.

Valley Forge During 1950 the Valley Forge Cement Company carried on an extensive improvement program which affected nearly every department of its plant at Valley Forge, Pa. The quarry has been completely re-equipped with a Marion 93M diesel shovel, two Euclid diesel trucks, and new crawler-type electric churn drills. In the raw department two 30-ft.-dia. slurry blending and storage tanks were added. Each of the kilns has been equipped with Oliver United disc-type slurry filters. At the present time Multiclone dust collectors are being installed between the kilns and existing Western Precipitation Corporation Cottrell precipitators, together with new kiln exhaust fans and Fuller-Kinyon systems for conveying the dust. Also completed were two additional dust storage bins with the feeding mechanism for mixing the Cottrell dust with the filter cake.

In the finish-grinding department new Pangborn dust collectors and new Fuller-Kinyon conveying systems have been installed. During the year the company also erected two new bulk-cement loading bins for direct loading into hopper bottom cars, each complete with Pangborn dust collectors and new Fuller-Kinyon systems for pumping cement to these bins.

Under construction at the present time is a new stone dust drying plant consisting of filters, driers, and dust collectors, with a Fuller-Kinyon conveying system to storage.

Volunteer The Volunteer Portland Cement Company late in 1950 put into service a new 10- by 300-ft. kiln at its plant near Knoxville, Tenn. This is complete with the necessary auxiliaries and gives the plant a capacity increase of about 60 percent. This installation was made after a careful survey of raw material reserves, present market and future possibilities had been made. The addition involved no changes in the flow sheet. The new machinery was lined up with the old, and the old buildings were extended to cover them. Little additional labor will be required to operate the expanded plant.

Other Nonmetals

(*From page* 120)

Sales of boron minerals also increased to 467,592 short tons, valued at $11,511,893, approaching the record high set in 1947. Domestic mine production of 731,308 tons of primary barite, valued at $5,642,226, was somewhat below the 1948 level, but still constituted the third greatest annual output on record. Sales of calcium chloride and calcium-magnesium chloride produced from natural brines were smaller in 1949 than in any post-war year, amounting to 255,797 tons, valued at $3,260,675.

• At the dedication dinner in the Smithwick office building were Mayor Dorothy McCullough Lee of Portland, S. Carl Smithwick, and Governor Douglas McKay.

Smithwick's $250,000 Plant Produces 300 Cubic Yards Of Haydite Daily

By HARRY F. UTLEY

another ON THE SPOT report

ONE of the finest, most modern expanded-shale aggregate plants in the country is the new haydite operation of Smithwick Concrete Products at Portland, Oregon.

The $250,000 plant, of all-steel construction and largely automatic in operation, is producing at the rate of 300 cu. yds. of finished material per 24-hr. day and has been in steady operation ever since production began in April, 1950. Its 8- by 100-ft. all-welded rotary kiln is said to be the largest in use in this industry. The plant operates under conditions and rigid specifications laid down by the American Aggregate Company, Kansas City, Mo., and is exclusively licensed to use the trade-name "Haydite" in the Pacific Northwest.

About 65 percent of the output is captive tonnage, used by Smithwick in manufacturing haydite concrete units in its high-capacity, Besser Vibrapac-equipped plants in Portland and Eugene, Ore. The remainder of the production is sold to other concrete-products plants, and used in structural and monolithic concrete construction. One of the biggest jobs in the last-named category was a contract to supply haydite aggregate for the decking of the new Tacoma Narrows Bridge at Tacoma, Wash. A total of 3,500 cu. yds. was furnished for this job alone—or enough to keep the plant busy for about two weeks.

The Smithwick deposit, embracing about 15 acres, is at Vernonia, Ore., about 40 miles west of Portland on the Spokane-Portland-Seattle Rwy. The shale is in the Keasey formation, marine in origin, and consolidated (not laminated) in occurrence. Fortunately, it is extremely low in iron oxide.

Relatively soft, the shale is drilled with jackhammers. Small, infrequent shots bring down sufficient material to keep the Bucyrus-Erie 15B diesel ½-cu. yd. shovel busy loading a hopper which feeds the primary crusher. The crusher, an Eagle machine with double-toothed rolls, is set to break at 5 in., discharging via conveyor to a carloading bin.

At the new plant in Portland the cars dump to a track hopper from which a short belt conveyor carries the shale to a Universal 18- by 30-in. roll crusher for reduction to

• At the ceremonies dedicating the plant on April 21, 1950, many notables were in attendance, including prominent political personages, engineers, and contractors.

• This view shows the company offices, with the block and haydite plants in the background.

• S. Carl Smithwick, president, and vice-presidents Otto C. Frei and Paul P. Klemens.
• Right: The roll crusher at the plant reduces shale to minus 2-in.

minus 2-in. It is then elevated to a 22- by 40-ft. cylindrical steel, conical-bottomed storage bin. There are four of these 600-cu. yd. capacity bins, all identical, at the plant. The other three store clinker and finished haydite.

A variable-speed belt feeder and elevator carry the shale to a feed tank above the charging end of the kiln.

The 8- by 100-ft. kiln is driven by a G.E. 25-hp. motor through a Western Gear reducer. Standby power is provided by a LeRoi 25-hp. gasoline engine. The kiln is lined with Mexico refractory brick, and firing of the Bunker "C" fuel oil is done by a Houck low-pressure burner. A 15-hp. boiler preheats the fuel oil. The kiln revolves at 1¼ r.p.m. and is pitched ½ in. per ft. of length. About one hour's time is required for the shale to pass through, expansion occurring at about 2,100 deg. F. Full instrumentation and electronic controls make the kiln operation automatic. A Brown Radiamatic pyrometer controller records bloating-zone temperatures and controls the fuel input. Hays gauges register stack draft and record exit-gas temperatures. Exit gases are discharged through a Multiclone 40-tube dust collector capable of handling 25,000 c.f.m., aided by a Clarage induced-draft fan. Dust is reclaimed by screw conveyor and sent back to the kiln-feed elevator.

A 5½- by 50-ft. rotary cooler lowers clinker temperature to about 125 deg. F. as discharged, the cooling period being about 20 min. Air heated during the cooling process is withdrawn and used as the secondary supply to the kiln.

During the bloating process the shale expands about 50 percent by volume, the 2-in. top size of the raw feed attaining about 3-in. maximum size as haydite clinker. An elevator carries this product to the clinker-storage bin, a Simplicity 3- by 6-ft. double-deck vibrating screen above the bin first taking out the ¾- to ⅜-in. haydite which is chuted to open storage. This size of material is produced exclusively for structural-concrete construction and is loaded by tractor scoop to cars and trucks. The remaining products of the screen are recombined and drop into the bin.

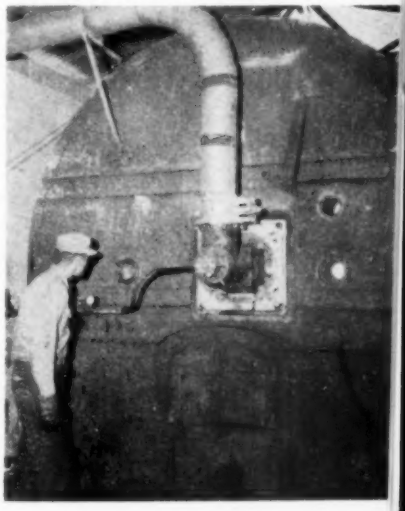
From the clinker bin, the haydite is withdrawn and carried by belt-conveyor to a building housing a Kennedy-Van Saun No. 38½ Type S fine-reduction crusher set at ½ in. The crushed product is elevated to a Simplicity 3- by 8-ft. double-deck screen, where the ⅜- to 3/16-in. Haydite and the minus 3/16-in. product are taken out and separately stored in two 600-cu. yd. bins. Any plus ⅜-in. material is scalped off by the top deck and returned to the Kennedy-Van Saun crusher. The two binned products are used in the concrete-products plants, being loaded into open-top cars directly from the bins. At present material used in the adjacent block plant is also loaded into hopper-bottom cars and then spotted over the receiving hopper for aggregate at the plant. A conveyor system is shortly to be installed, however, to carry the haydite directly to the block-plant bins.

The kiln, cooler, and elevators were manufactured by the General Machinery Company, at Spokane. The four steel storage bins were

(*Continued on page* 142)

• The gyratory crusher and drive. This unit makes the final reduction on the finished haydite.

• The hood of the kiln, showing the air and fuel supply pipes to the oil burner.



delayed action

BLAST

THIS excellent sequence of pictures was taken at 1/3-second intervals, showing very clearly the desirable results obtained through the use of delayed blasting techniques. As evidenced in these pictures, even when the blast is at its peak—before the rock begins to drop—no spouts of escaping explosive gases are apparent. The good control of explosive energy and therefore the good control of throw and breakage is evident, since no rock is being thrown above the face.

This shot consisted of 17 holes filled with 22,100 lbs. of Atlas Powder Company explosives, using a powder factor of 2.98 tons per pound of powder. Five holes on the high face each averaged 170 ft. in depth. There were also 12 holes averaging 100 ft. in depth on the lower face. In order to pull out the toe, 500 lbs. of 75-percent Giant Gelatin in 5-in. diameter, 25-lb. cartridges was used.

For the top charge, the holes were filled with Apex No. 3, in 5-in.-diameter, 25-lb. cartridges. The holes were fired from the bottom, using electric blasting caps. Millisecond delay periods "1" and "2" were used alternately in the single row of holes.

WASHINGTON NEWS LETTER

By S. HERBERT UNTERBERGER

Outlook for Construction

SINCE the Korean crisis, the construction industry has been bounced around as if it were "tossed in a blanket." On the one hand, rules and regulations have followed one after the other in rapid array. Generally, their purpose has been to cut back the construction industry; on the other hand, defense requirements for new construction have been mounting. Only now is it becoming possible to see, at least in broad outline, the net effect of all these developments.

The planners here in Washington expect the net effect to be no more than a 15 percent cut in construction activity; but they also expect a substantial change from one kind of construction to another.

They confidently expect a decline in certain types of construction. Non-essential construction, such as racetracks and amusement places will be cut more than 60 percent. Housing will be cut substantially, particularly low-priced housing which was previously bought with a low down payment or no down payment at all. Commercial building will be cut more than 20 percent. This includes stores, office buildings, warehouses, garages, etc.

However, they also expect a very substantial rise—more than one-third—in industrial building. The defense effort demands an expansion of plant capacity, and the only way to achieve that is by expanded industrial construction. The defense effort also demands an increase in our power producing facilities and in our railroads. Hence, the construction of generating capacity will show a continued increase. Also the railroads will be required to enlarge their facilities. The other major source of increased construction activity will be the government—local, state, and federal. At local and state levels most of the stepped up building will include schools, hospitals, and some roads. At the federal level there will be some expansion resulting from the requirements of the military, and highway construction may also show a rise.

Businessmen in the construction and related industries are expected to do their planning in terms of this outlook. They can expect to be quite busy, but there is sure to be a definite change in the kind of activities to which they will devote their efforts.

The Defense Time-Table

The schedule for converting the American economy to a wartime footing is pretty well established by now. Military victories or defeats could slow it down or speed it up slightly, but not very much. It just takes time to make the change-over and very little can be done about it.

As seen from Washington now, defense production will probably not reach its peak until the end of 1951. In the next few months, however, the effects of the defense program will be felt increasingly, and these effects will not be pleasant.

Many workers are going to have to change their jobs. Cutbacks in the supply of many raw materials for civilian use will occur with increasing frequency and severity. Workers in aluminum fabricating plants are already looking around for new jobs in defense industries. As might be expected, workers are reluctant to change jobs even to defense industries. Generally, they have been making good wages where they are. The recent flood of pension programs makes them reluctant to move because they may lose pension rights which they can never recover.

Businessmen, too, are reluctant to change over from what has been a profitable business to what may be quite a gamble, but change they must. If Washington has its way, most of the changes will occur before the middle of 1951.

The dislocations should be over by that time, with workers settled in their new jobs and businessmen settled in their new activities, but the program is not expected to be in high gear even then. There will still be bottle-necks, shortages, inadequate facilities, and even some unemployment.

By the end of 1951 defense production is expected to have reached its peak. Unemployment should be down to the barest minimum. Over 64,000,000 people should be employed, including many women not now working.

This time-table appears to be leisurely. As a matter of fact, it is several times as fast as the one adopted at the beginning of World War II.

Excess Profits Taxes

The Administration has unfolded its ideas about excess profits taxes, and the fight is on. From present indications, however, there will be no decision until well after January 1, 1951. The Administration wants a 75 percent excess profits tax, which would apply to all earnings of corporation in excess of their earnings during the best three profit years during the four-year period, 1946-1949. Earnings up to $25,000 would be exempt. The tax would be effective as of July 1, 1950.

An alternative method of figuring "normal" earnings would be to take a certain percentage of investment. The Administration did not propose a specific percentage. Secretary of the Treasury Snyder merely recommended that it be more liberal than the World War II rule, which permitted 8 percent on the first $5,000,000 of invested capital, 6 percent on the next $5,000,000 and 5 percent on the remainder.

All of the old arguments for and against an excess profits tax are being heard around Washington. Everybody is in favor of taxing away the excess profits made out of the defense program, but that is where the unanimity stops.

It is almost impossible to get any two people to agree on what "excess profits" are. The Administration has come forth with its idea, but it is being attacked vigorously. For many businesses, the base years chosen are extremely unfortunate; for others, they provide a windfall. A new crop of requests for different base periods, claiming unusual circumstances, is sure to develop. Many cases left over from World War II still need to be settled.

Some people argue that an excess profits tax is a temporary emergency measure. While they concede that there is an emergency, they do not regard it as temporary and therefore they conclude that it is an inappropriate measure.

Others, recalling the experience of World War II, argue that the imposition of an excess profits tax is just an invitation to reckless spending. Once a corporation has reached

(*Continued on page* 143)

WORK HORSE FOR HORSEPOWER

QUAKER BELT STILL GOING STRONG AFTER 10 YEARS

Running smoothly day and night for six years without "shut down time"... and then put in an eight hour day for more than four years... at all times giving maximum power delivery... with Quaker on the drive. Previous belt lasted five years. Result: A saving of more than $400 in belt replacement cost alone!

Performance like this comes naturally when Quaker Transmission Belts are on the drives. That's because they are scientifically designed and made of the highest quality duck and rubber compounds. The special construction results in greater load capacity, longer flex life, and prevents excess stress and slippage. And Quaker belts can take severe flexing like the short-center drive illustrated below.

The work horse ability of Quaker Transmission Belts characterizes all of Quaker's pre-tested, performance proven products.

If you attend the 34th Annual Convention of the National Sand and Gravel Association, stop by at our Cleveland branch and see the Quaker products on display. The address is 2901 Chester Avenue, Cleveland 14. Your visit will certainly be welcomed.

HOSE THAT LASTS

... because it has been pre-tested to stand pressure and resist wear. There's a Quaker Hose for use with air, water, steam, volatiles, acids, and gases.

V-BELTS THAT BOOST POWER

Quaker's complete line of V-Belts for every power installation is pre-tested and service-proved to provide sure-grip . . . to slip less . . . and to save power.

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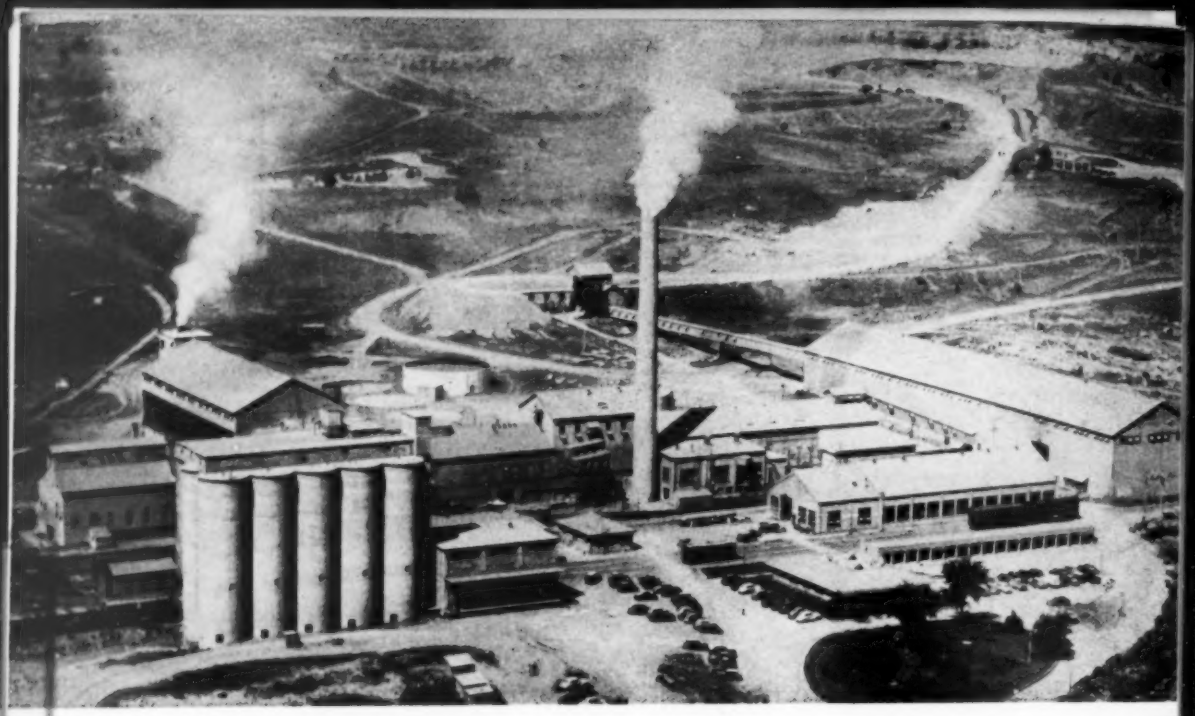


Almost every department affected in capacity-doubling expansion at the

South Dakota Cement Plant

By WALTER E. TRAUFFER

another ON THE SPOT report

WHEN the new 2,000-bbl.-per-day addition to the South Dakota Cement Plant at Rapid City, S. D., went into operation on June 24, 1950, more than doubling the capacity of this wet-process plant, it assured an adequate supply of cement to an area which is now out of the economical shipping range of other cement plants. As in most other states, the demand for cement in South Dakota has been increasing steadily for many years and particularly in the last few years when it has far exceeded the supply. Near the end of 1950 the cement used in the state was 30 percent above the same period of 1949, and the plant was over 50,000 bbls. behind in its orders.

From the time the plant started up in 1925 through the end of 1949, it had produced over 12 million bbls. of cement. During the last four years the kilns had been operated 99 percent of the time, exclusive of emergency repairs, and in 1950 the down time was only 20 days.

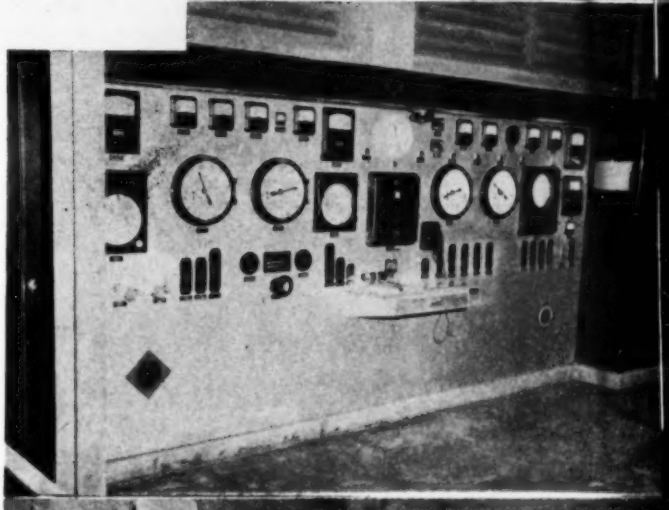
The new 11- by 375-ft. rotary kiln.

Above: One of the two new preliminary raw mills.

Right: The new 4½- by 70-ft. clinker cooler and fan.

Pictured on these pages are a number of the new additions to plant equipment

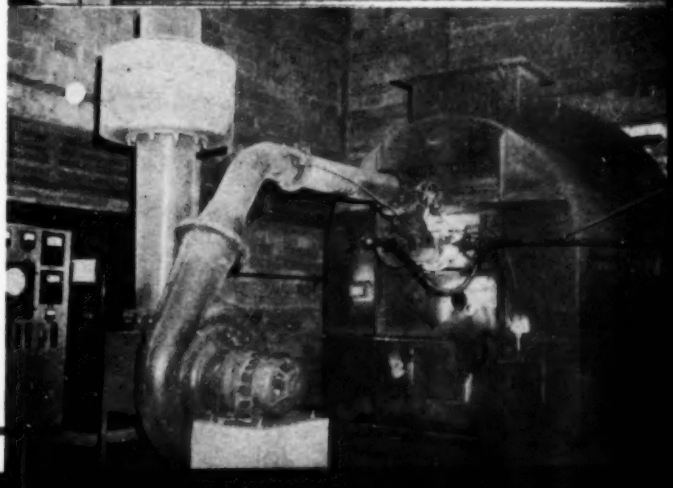
For many years this plant has produced from 90 to 95 percent of the cement used in South Dakota, and about 15 percent of its output has gone outside the state. In addition to South Dakota the sales territory includes southwestern North Dakota, northwestern Nebraska, eastern Wyoming, and southeastern Montana. Shipments are made for all types of work, including army, bureau of reclamation, and other projects.



Complete control board for kiln, cooler, etc.

The cement produced meets all specifications. The cements now being made are Types 1, 1A, 2, 2A, 3, and masonry.

As the years passed, a number of improvements were made to the plant which increased its efficiency but not its capacity. At the same time the population of the state increased steadily and with it the demand for cement. It was decided in July, 1948, that the demand in the area so far exceeded the supply that added capacity was necessary. In February, 1949, the state legislature authorized the South Dakota Cement Commission to issue $1,500,000 in general obligation bonds to finance an expansion program. A contract was let to MacDonald Engineering Company for the design and construction supervision, and ground was broken in May, 1949. The new kiln was in operation on June 24, 1950.



Hood, blower, and burner of the new 375-ft. kiln.

The new addition is notable for the fact that its design and efficiency keeps this plant, the only state-owned-and-operated plant in the United States, in the forefront of the

The 2½-cu. yd. quarry shovel loading stone into one of the 10-ton side-dump trucks. The same equipment is used in the shale quarry.

industry as a manufacturing unit It differs from most government-owned-and-operated industrial operations of any kind, both here and abroad, in that it is operated as a business by competent men experienced in the various aspects of the cement industry. As a result it is a well-designed, well-maintained, efficient operation, producing a high-grade product economically. In preparation for this expansion a number of additions had been made to the existing plant, and this made it possible to install the new equipment and build the required structures with the minimum of lost operating time.

The existing plant, when it started up in January, 1925, was a complete 2,000-bbl.-per-day wet process operation with two 10- by 150-ft. kilns, waste-heat boilers and rotary coolers, raw and clinker storage buildings, cement silos, a bag house and a packhouse. Few changes of any importance were made in it until the last few years and many of these were in preparation for the expansion of the plant. These included the installation of direct-firing coal mills, disc slurry filters, truck haulage and diesel shovel in the quarry, air-quenching clinker coolers, clinker scales, etc.

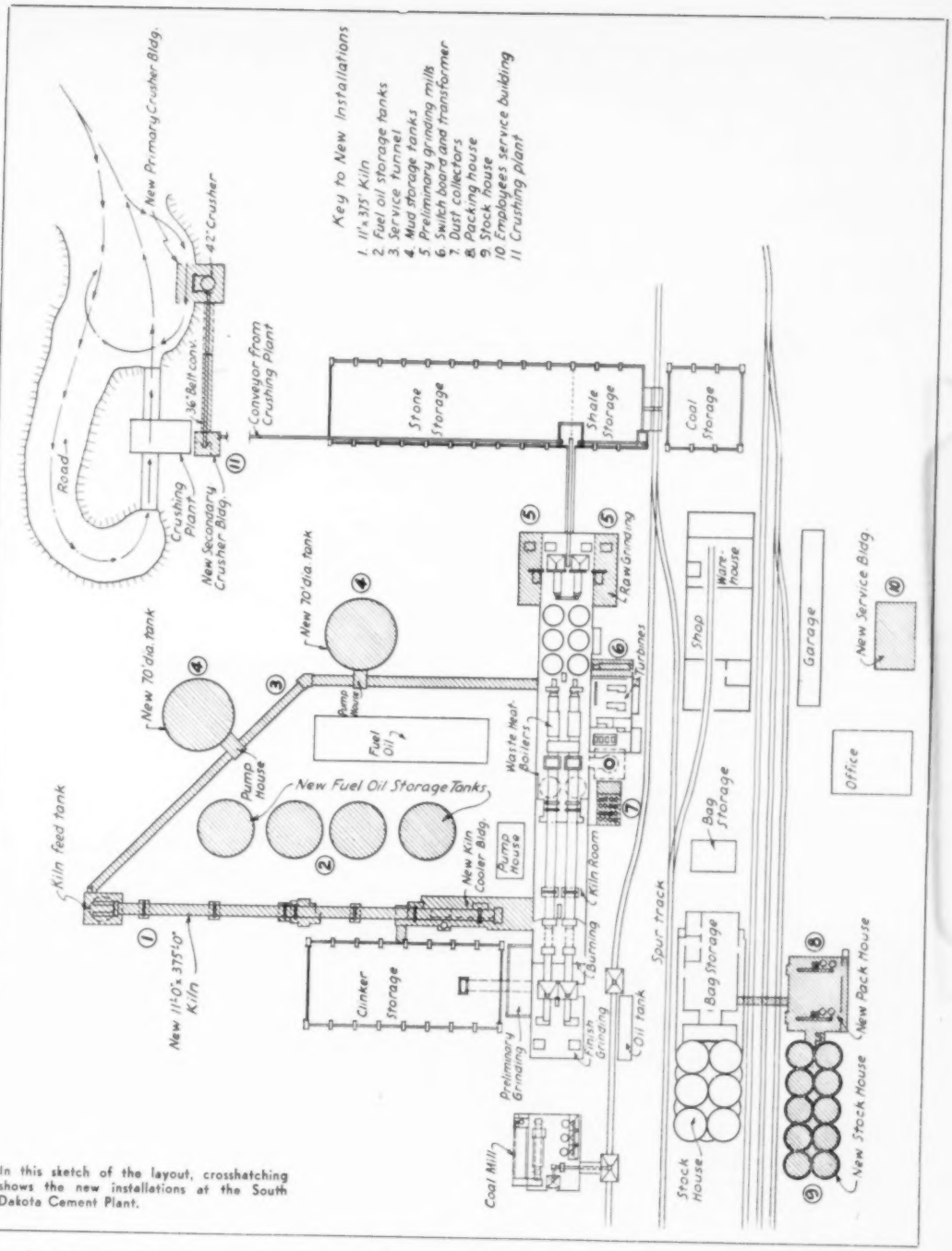
This aerial view of the South Dakota Cement Plant shows the crusher house, the conveyor and raw storage, the new slurry and fuel oil storage tanks, the new kiln, and the new cement silos and packhouse.

The new program, started in May, 1949, included the installation of two preliminary raw mills, screens, pumps, two slurry storage tanks, a service tunnel, the new 11- by 375-ft. kiln with air-quenching cooler, coal mill, control board, etc., 110,000-bbl. cement silos, packhouse, main switchboard, outdoor substation, etc. A new crushing department of greater capacity and a concrete kiln stack are to be built in 1951, and a stack dust collector for the new kiln is also in prospect.

The MacDonald Engineering Company did all the design and engineering and supervised all construction for the new addition. The Allis Chalmers Manufacturing Company furnished the important cement manufacturing and electrical equipment, including grinding mills, kiln, cooler, motors, etc. The Fuller Company supplied the compressors and cement pumps, and the Dorr Company furnished all mechanical and air slurry mixers. The actual construction work and the erection and placing of equipment was done by the cement plant forces.

Plant History

A brief summary of the history of this plant should be interesting. In the General Election in 1917 an amendment to the South Dakota State Constitution was voted and passed which authorized the construction and operation of the South Dakota Cement Plant. In August, 1919, the first cement commission was organized, with its first duty the location of a suitable site for the plant. After thorough investigation, the site 2 miles west of Rapid City was selected, and 188 acres of land was purchased. Another 40-acre tract 5 miles east of Rapid City was purchased for use as a shale quarry. Since then 220 additional

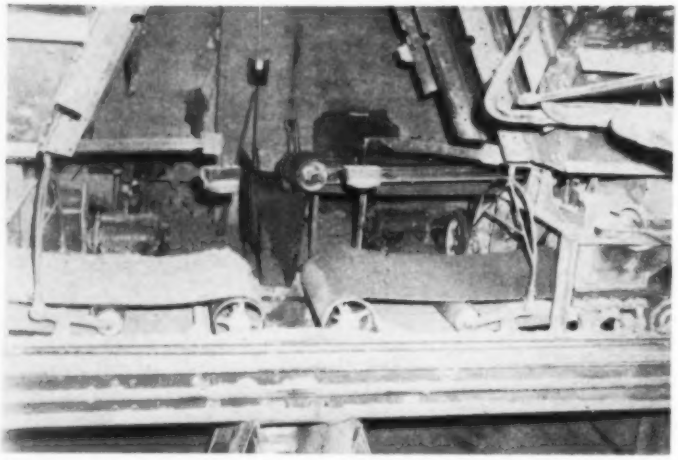


In this sketch of the layout, crosshatching shows the new installations at the South Dakota Cement Plant.

acres have been purchased.

It had been decided that a 2,000-bbl. wet-process plant would best suit the needs and the available raw materials. Early in 1923 a contract was made with J. C. Buckbee Company, Engineers, to take charge of the engineering, preparation of plans, and supervision of plant construction. The first contracts for construction were let early in May, 1923, and ground was broken in June, 1923. All buildings were completed and all machinery installed in December, 1924, and the plant was in operation on a commercial basis in January, 1925.

The original plant had been op-



The two weighing feeders for limestone and shale ahead of the raw mills. Iron ore is fed from the conveyor in the center.

erated with few major changes but with the best of maintenance until late in 1946. Because of the scarcity of fuel in this area it has been necessary to burn Wyoming sub-bituminous coal, little better than lignite. This has an average moisture content of 33 percent as received and a heat value of only 8,000 B.t.u.'s per lb. The handling of this coal was a problem which was solved when a No. 433 Raymond direct-firing coal mill was installed in August, 1945. A second mill was installed in March, 1946. The slurry in those days went into the two 10- by 150-ft. kilns with a moisture content of 35 percent. In order to decrease the fuel consumption and increase the output, four Oliver American continuous slurry filters, each with eleven 12 ft. 6 in. discs, were installed and in operation in the summer of 1947. These reduce the slurry moisture content to 18 to 20 percent.

The next installation, also made primarily to reduce fuel consumption, consisted of two Allis-Chalmers 4-ft. 6-in. by 50-ft. shaking grate, air-quenching clinker coolers, to replace the original rotary coolers. These went into operation early in 1949. Together the filters and coolers brought the coal consumption down 63 lbs. per bbl. (including 33 percent moisture). These improvements also increased the kiln capacity about 12 percent, bringing the output of each kiln from 950 to 1,000 bbls. up to 1,100 bbls. per day.

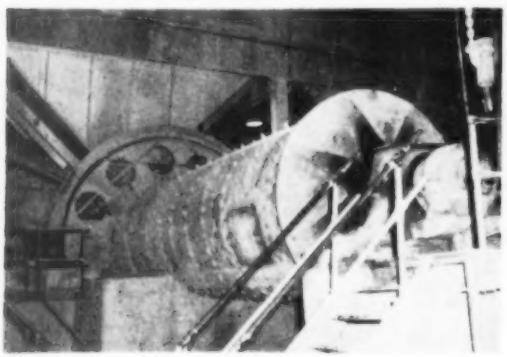
Other changes made in recent years also helped to keep the original plant in excellent operating condition. In 1947 the steam locomotives and cars used to haul raw materials to the plant were replaced by trucks and the steam shovel by a new 2½-cu. yd. diesel shovel. In the new program no changes were made in the crushing department, but a complete new crushing building will be built in 1951 for limestone only. The old building will then be used for shale and gypsum. In the raw grinding department the two two-compartment mills were converted into tube mills and two new preliminary grinding mills were installed with vibrating screens in closed circuit, and with weighing and proportioning feeders. The new 10,000-bbl. slurry storage tanks equipped with Dorr H-1 slurry mixers were added, along with the necessary pumps and a 500-ft. utility and service tunnel, and a new 850-bbl. feed tank with Dorr type "A" slurry mixer was built for the new kiln. Masco-Grigsby valves are used on all slurry lines. The new 11- by 375-ft. kiln has a ferris-wheel feeder, a 4½- by 70-ft. air-quenching clinker cooler, and a complete control board. It is equipped for coal, oil, or gas firing, with a direct-firing coal pulverizer. A scale weighs the clinker going to storage. Four 420,000-gal. bolted steel fuel oil storage tanks were also installed.

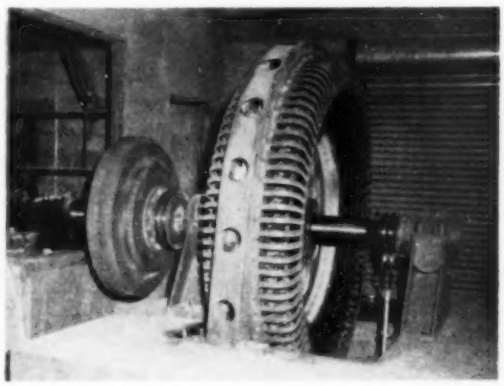
No changes were made in the existing clinker storage or handling systems, in the finish-grinding department or in the original storage and packing buildings, nor are any contemplated. The clinker mills had been installed with sufficient capacity so that grinding could be done primarily during the then comparatively short shipping season. Their 5,000-bbl.-per-day capacity extended over longer periods is ample for all present and foreseeable future needs. However, new cement pumps were installed to feed from the finish mills to the old storage and to the new 110,000-bbl. silos and packhouse.

Quarrying and Haulage

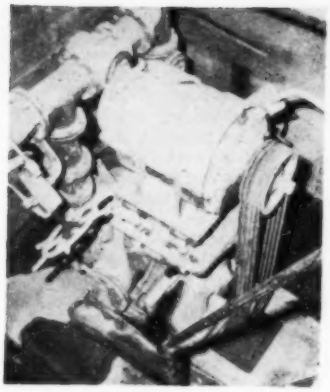
The limestone deposit from which the plant is being supplied is in the

Below: One of the two final raw-grinding tube mills which were formerly two-compartment mills.





The 350-hp. synchronous motor driving one of the tube mills through a magnetic clutch.



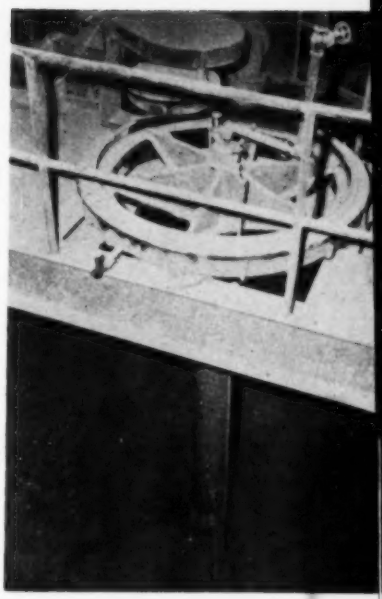
One of the pumps feeding slurry from blending to storage tanks.

Minnekahta formation and has an average thickness of about 40 ft. It is highly stratified, with layers varying in thickness from a few inches near the bottom to 4 or 5 ft. near the top. Under the limestone is about 100 ft. of Opeche shale. The peculiarity of both these deposits is that they are a wavy formation, following the rolling contour of the ground. Apparently there is no accepted explanation of this phenomenon, but the extent of breakage of the limestone layers indicate that it was due to some kind of upheaval. There is no overburden, and the limestone is worked as one level—with the top surface of the shale as the quarry floor—and 25 ft. of the shale is worked as a lower level.

Drilling is done with a Bucyrus-Erie 27T churn drill having a 6-in. bit, and two Sullivan wagon drills handling 1 in. steel with 2⅛ in. bits. The churn drill holes are spaced 16 ft. apart with 16-ft. burden and are drilled the full 40-ft. depth of the deposit. Between these holes are eight 16-ft. deep wagon drill holes to get the best possible breakage of the massive top layers. As a result, very little secondary blasting is necessary, and this is done by blockholing. Atlas Rockmaster delay caps are used, with Atlas Amadyn No. 6 explosive, 5- by 16-in. cartridges being used in the large holes. Almost exactly the same procedure is used for the shale, which is also more massive near the top.

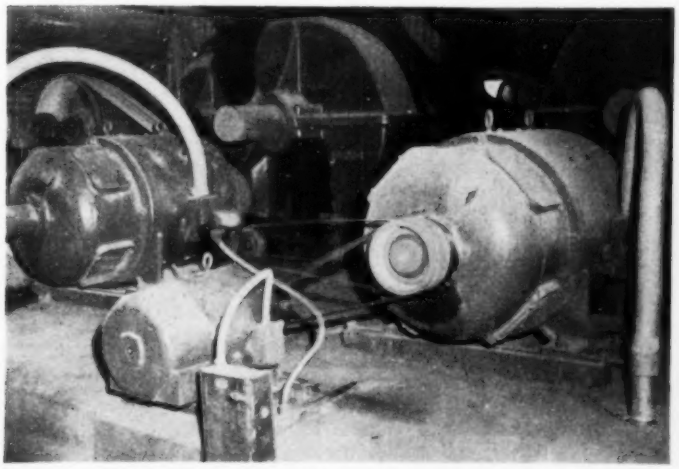
A Marion 93M diesel shovel with a 2½-cu. yd. dipper is used for loading from both deposits. This shovel can be moved from one level to the other in about 30 min. In the gypsum quarry the loading is done with a 20B Bucyrus-Erie shovel. Only wagon drills are used there. The same drilling, blasting, and shovel crews are used in these three quarries, which are operated so as to keep adequate supplies of all three materials in plant storage at all times. The same fleet of four Mack trucks with 10-ton Gar Wood side-dump bodies serves all three quarries, and these materials are all hauled to the same crushing plant. The shale and limestone quarries are ⅝ mi. from the plant, and the gypsum mine is 2 mi. away. The iron ore is brought in by trucks from deposits 20 mi. distant.

Mechanical and air slurry mixing mechanism of one of the six slurry blending tanks.



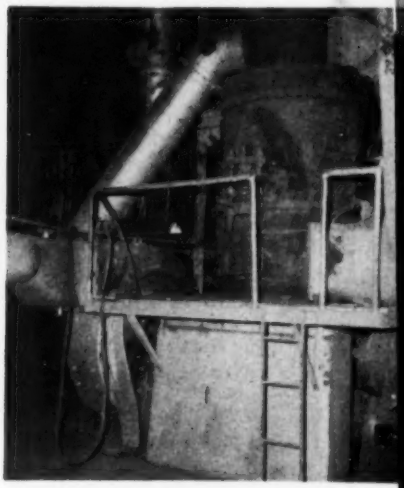
Crushing

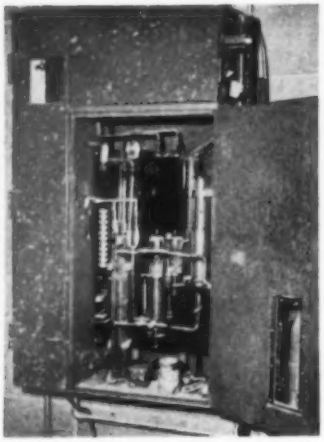
It has been mentioned that the existing crushing plant is to be supplemented during 1951 by a larger plant as the present capacity of 1,200 tons per 8-hr. day leaves no margin for emergencies. This will be used only for limestone, leaving the old plant to crush the shale and gypsum. The new plant will have a 42-in. Allis-Chalmers McCully gyratory primary crusher and a 350-t.p.h. Jeffrey hammermill which will reduce the stone to minus ¾-in. In feeding to the existing plant the



The motor and reducer drive of the new kiln. The generator (foreground) synchronizes kiln and feeder speeds.

Below: The direct-firing coal mill connected to one of the two original kilns.





The oxygen analyzer, which is the heart of the kiln control system.

trucks travel an earthen ramp and fill which circles around the crusher building, so the trucks enter at the back. A hydraulic cylinder is used to dump the contents of the trucks into the 20-in. Allis-Chalmers McCully primary crusher. A new spider recently installed on this crusher is the only major repair necessary in the 25 years it has been in use. The minus 3-in. product of this crusher is carried on a short apron conveyor to the 26- by 38-in. Jeffrey hammermill. The ¾-in.-minus product is carried on a 24-in. by 770-ft. belt conveyor to the original raw material storage building. This is used for storing limestone, shale, and iron ore. It is an 80- by 400-ft. covered concrete-and-steel structure with a 3-cu. yd. clamshell operated from an overhead traveling crane.

Original design clinker crusher at the discharge end of the new clinker cooler.

Raw Mix

The Pierre shale originally used in this plant was lower in silica than the present Opeche shale but was higher in alumina. This and the long and expensive haul required resulted in the change to the present deposit. With the high silica content of the present Opeche shale, it is necessary to use about 5 percent iron ore with an average mix of 3 parts of limestone and 1 part of shale. Following are typical analyses of the three raw materials.

	Limestone Percent	Shale Percent	Iron Ore Percent
$Si\ O_2$	1.60	57.57	7.96
$Fe_2\ O_3$	.36	2.53	69.50
$Al_2\ O_3$	.48	10.24	2.50
Ca O	54.23	10.98	——
Mg O	.58	3.18	——
$S\ O_3$	.01	——	——
Ignition Loss	42.72	13.95	20.04

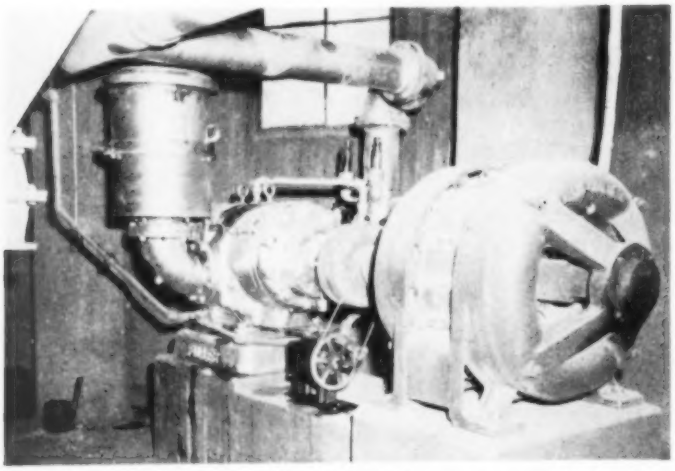
Raw-Grinding

In the old raw mill two 7- by 22-ft. Allis-Chalmers Compeb mills did all the grinding. When the plant was enlarged, two new 8- by 12-ft. Allis-Chalmers Preliminators were installed. The division heads were then taken out of the Compebs and they are now used as straight finishing tube mills. Two 24-in. by 8-ft. Schaffer Poidometers proportion and record the weight of limestone and shale for both series of mills, and each Preliminator is fed by a Hardinge constant-weight feeder at the rate of 30 t.p.h. Iron ore is also added at this point.

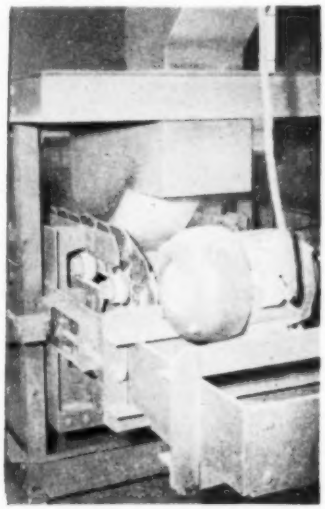
The slurry from each Preliminator is fed by a 3-in. Wilfley pump over a 4- by 8-ft. Allis-Chalmers Aerovibe single-deck screen with 10-mesh wire cloth. These return plus 10-mesh material to the Preliminators, and the slurry through them is fed by gravity to the drum feeders of the two tube mills.

The Preliminators are each loaded with 30 tons of Sheffield Molybdenum grinding balls—25,000 lbs. of 1½-in., 15,000 lbs. of 2-in., 15,000 lbs. of 3-in., and 5,000 lbs. of 3½-in. The tube mills are each loaded with 45 tons of 1¼-in. balls of the same make and type. The Preliminators are driven at the rate of 21 r.p.m. by Allis-Chalmers 350-hp., 180-r.p.m. synchronous motors and the tube mills at the same speed by 400-hp. A-C synchronous motors, all through Cutler-Hammer magnetic clutches.

Below: This recording weighing device records the amount of clinker going into storage from the new kiln.



One of the rotary compressors which supply air for the cement pumps under the silos.



Slurry Blending

The finished slurry has a fineness of 92 percent through 200-mesh and a moisture content of 34 percent. A pair of 4-in. Wilfley pumps, one in reserve, feeds the slurry to six existing 1,300-bbl. circular blending tanks, each 20 ft. in diameter by 40 ft. high. These are equipped with air agitation. The blended slurry is transferred by a 6-in. Wilfley pump to one of the two new MacDonald 27- by 70-ft., 10,000-bbl. circular storage tanks. These have Dorr Type H-1 mechanical and air slurry mixing mechanisms. A Fuller C-110 rotary compressor provides the air for agitation. Both the old and the new kilns are fed from this tank.

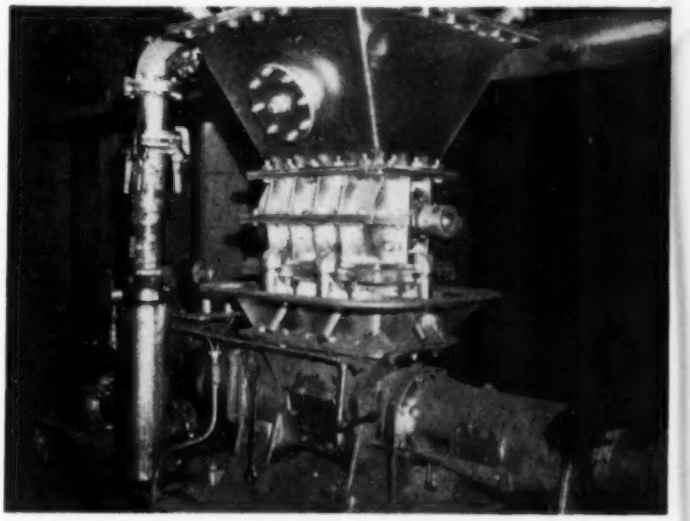
An interesting feature at this point is the new 500-ft. long concrete service tunnel which connects the six blending tanks with the feed building of the new kiln. This tunnel houses the necessary electric conduits and slurry, water, gas, air, and steam pipelines. In two pits adjacent to the two slurry storage tanks are the slurry pumps feeding from them, and these are also access points to the tunnel. The winters being very severe, this tunnel also provides access to these points in any kind of weather, as the new kiln is exposed for almost its entire length.

Original Kilns

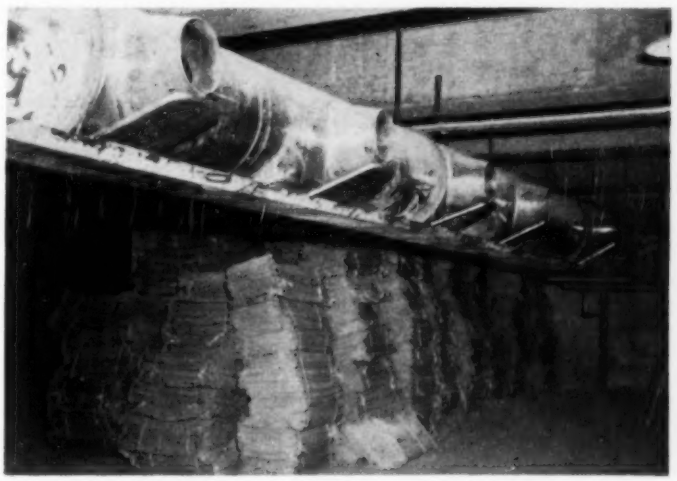
Wilfley 5-in. pumps feed slurry from the common storage tanks into two 20- by 20-ft. feed tanks for the two old kilns. These tanks have mechanical agitation only. Two 3-in. Wilfley pumps feed the slurry from these tanks against a 70-ft. head to the two Oliver American filters, each of which has eleven 12-ft. 6-in. discs. These reduce the moisture content of the slurry from 35 percent down to 18 to 20 percent. The filter cake is carried on 30-in. belt conveyors to pug mills which break it down before it is fed by gravity into the kilns.

The two original kilns are 10 ft. in diameter and 150 ft. long and are equipped for coal, oil, or natural gas firing. With the higher exit gas temperatures now required, Chicago Steel Foundry Company Pyrosteel alloy steel retaining rings were installed at the feed ends. At the discharge ends are new Allis-Chalmers air-cooled ends and hoods. Coal firing is done with Raymond direct-firing bowl mills which replaced the original coal mill with its crusher, 7- by 50-ft. rotary drier, and three pulverizers. For a time the drier was retained to predry the coal, but this is no longer necessary except during periods of heavy snow when the moisture content of the coal exceeds 35 percent. The two coal mills have 600-deg. F. inlet and 170-deg. F. outlet temperatures. The kilns are connected to two Babcock & Wilcox 700-hp. waste-heat boilers with economizers and superheaters. These are original equipment and supplied a part of the plant's power requirements until the filters were installed. The higher exhaust gas temperature—1,300 deg. F.—resulting from this installation made it possible for the boilers to furnish enough steam to generate power for the entire original plant. With the new plant addition, however, it is again necessary to purchase power for about half the plant requirements. The gas from both old kilns is exhausted through a 200-ft. concrete stack. In order to remove and conserve as much as possible of the stack dust, two Buell dust collectors, each consisting of 8 No. 12½ A_z cyclones, have been installed. These have Buffalo fans driven by 350-hp. Allis-Chalmers motors which replaced the old draft fans.

The clinker is discharged from these kilns into two Allis-Chalmers 4½- by 50-ft. shaking grate clinker coolers which in 1949 replaced the old 8- by 60-ft. rotary coolers. A 24-in. Perkins pivoted bucket conveyor carries the clinker to storage. At the discharge end of this conveyor



One of the movable cement pumps which reclaim cement from the new silos.



The evaporator and duct which humidify the atmosphere in the basement bag storage of the packhouse.

One of the two new four-tube bag packers with its control panel and one of the 100-bbl. storage tanks (right).

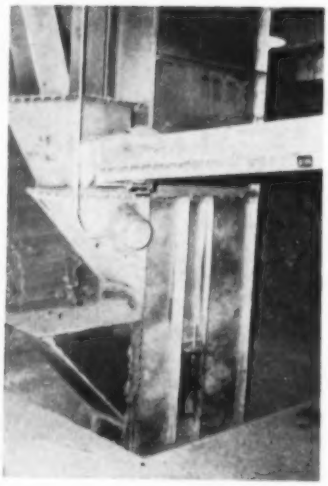
a Merrick Weightometer keeps a continuous weight record.

New Kiln

The same 5-in. Wilfley pumps which serve the old kilns also feed blended slurry from the common storage tanks to the 24-ft. dia. by 17-ft. deep MacDonald feed tank for the new kiln. This tank has a Type A Dorr slurry mixer. Two 3-in. Wilfley pumps (one in reserve) feed the slurry from this tank to the 13-in. Allis-Chalmers ferris-wheel feeder ahead of the kiln. A 5-hp. feeder motor is synchronized with kiln speed by means of an alternator driven by one of the two d.-c. kiln drive motors. This feeder may also be switched to the 440-volt power supply which will operate the motor at a constant speed, and the feed can be controlled by a vari-pitch drive.

This is an 11- by 375-ft. Allis-Chalmers all-welded rotary kiln mounted on six supports, with a slope of 3/8 in. per ft. and having a 3/4-in. steel plate shell. Flood-lubricated, water-cooled carrier roll bearings are used. It is driven at any desired speed up to 1.5 r.p.m. by two 60/75-hp. Allis-Chalmers 230-250-v., 1200/400 r.p.m. adjustable speed d.-c. motors through a Falk 17:7 ratio herringbone reducer, Texrope V-belts and gears. The auxiliary drive is an Allis-Chalmers gasoline engine.

For a distance of 90 ft. at the feed end of the kiln about 43,000 lbs. of 5/8-in. chain is hung in planes from spiral lifters with eight spirals per plane. In the 90-ft. chain section the kiln is lined with 4 1/2-in. concrete. At the burning zone 30 ft. of 9-in. Permanente periclase brick is used, and there is 40 ft. of 70 percent alumina adjoining it. The balance of the kiln is lined with 40 percent alumina firebrick. No insulation is used.

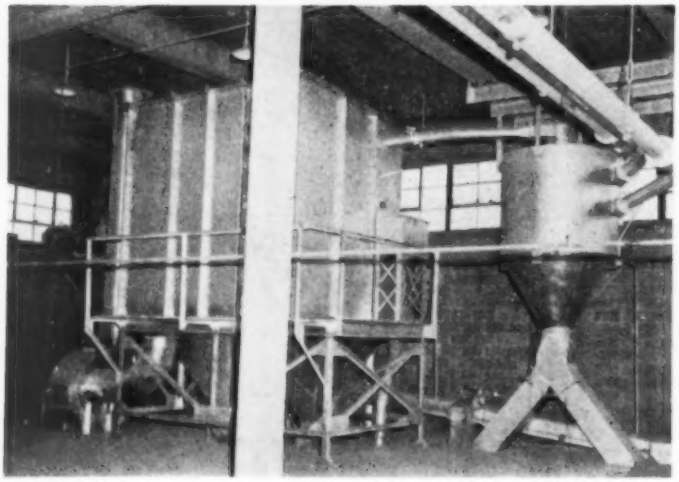


The air conveyor which carries cement from the storage tank to the elevator in the packer feed circuit.

Draft for this kiln is created by a No. 8 Sturtevant exhaust fan driven by a 125-hp. motor. This is capable of handling 110,000 c.f.m. of kiln exhaust gases at 500 deg. F. against 4-in. water gauge static pressure. It is driven by a 125-hp. 900-r.p.m., 2300-v. motor through Texropes. This fan is at present connected to a short steel stack which will be replaced early in 1951 with a 200-ft. Custodis reinforced concrete stack. This will be built under MacDonald supervision. Space will be left for the possible future installation of any type of stack dust collector.

Coal is ordinarily the most economical and satisfactory fuel at this plant and is used for both old kilns. Availability of a large quantity of No. 6 residual fuel oil decided the management to use oil in the new kiln. This oil is trucked in from several of the many refineries near the borders of South Dakota, Wyoming and Nebraska. Mechanical atomizing burners are used. The oil is heated to 220 deg. F. controlled by McAlear regulators and supplied to the burner at 325 p.s.i. by De Laval-IMO fuel pumps. This kiln under normal conditions uses 7 1/2 gal. of this 150,000 B.t.u. gal. oil per bbl. of clinker produced. A new Raymond No. 533 direct-firing coal mill is kept in reserve and can be put into service on short notice. It is powered by a 200-hp., 1,200-r.p.m., 2,300-v. motor. This kiln is also equipped to burn natural gas.

Clinker is discharged from the kiln into the 4 1/2- by 70-ft. Allis-Chalmers shaking grate, air-quenching clinker cooler. This has a 15-hp., 230-v. d.-c. motor and is equipped with an American Blower fan driven by a 60-hp., 440-v. a.-c. motor. A 150-kv. Allis-Chalmers motor-generator set driven by a 250-hp. squirrel-cage motor provides the 250-v. direct current for the kiln feeder, kiln, and cooler drive motors. The clinker is discharged from the cooler at a temperature of 150-175 deg. F. At the end of the cooler are grate



The dust-collecting system connected to one of the two bag packers.

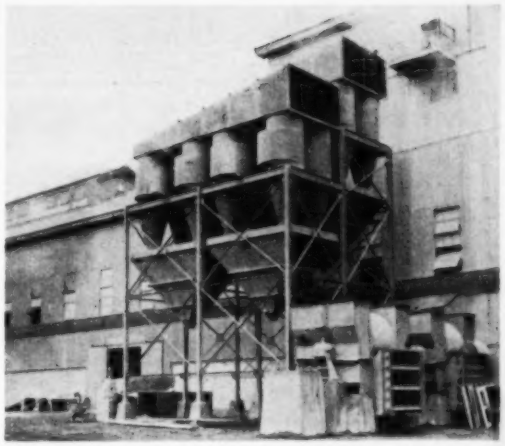
bars, spaced 2½ in. apart, over the end of which has been installed a clinker crusher of own design. This consists of a series of 16-in.-dia. saw-tooth discs made of 1-in. plate and spaced to fit between and slightly below the grate bars. An Allis-Chalmers reciprocating apron conveyor carries the clinker to a concrete pit from which it is recovered by one of two duplicate Link-Belt chain bucket elevators. A short belt conveyor feeds the clinker into storage, and a Merrick Weightometer keeps a continuous weight record of the clinker from this kiln.

Control of the new kiln is almost entirely automatic, and it is so thoroughly instrumented that any abnormal condition is indicated at once, either through the instruments or signal lights, so that it can be corrected before any serious variations occur in the product. The Allis-Chalmers kiln control panel or cubicle has all the usual indicating and recording instruments for the kiln, cooler, and coal mill. A Leeds & Northrup Rayotube optical pyrometer holds the radiant temperature at the firing end at 2,400-2,600 deg. F. The actual exit gas discharge temperature is kept at about 400 deg. F., at which point the highest possible efficiency and capacity are obtained without excessive dusting. The actual temperature in the burning zone is about 2,700 deg. F. The kiln is operated at a constant speed of 75 r.p.hr., all adjustments being made in the rate of fuel feed.

The heart of the control system is a Leeds & Northrup oxygen analyzer which, according to plant authorities, takes the guesswork out of kiln operation. This instrument detects changes in burning conditions in one minute, as compared with 15 to 20 minutes when exit gas temperature readings are used as a guide. It also quickly indicates a lack of fuel or a change in its quality.

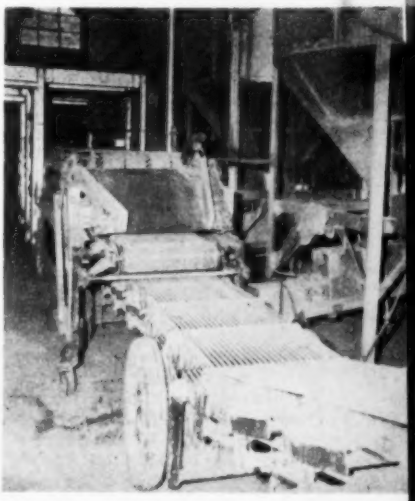
The controls on the master control panel include:

1. A Leeds & Northrup kiln draft control system to maintain automatically a constant draft at the firing hood. This system consists of a constant furnace pressure controller, a damper drive unit including a hand wheel for manual operation of the damper, and a slide wire for use with the damper position indicator, and red and green signal lights.
2. A 2-pen Hays draft recorder for recording draft at both ends of the kiln.
3. A 2-unit Hays draft gauge for indicating drafts at the hood and feed ends.
4. A Leeds & Northrup radiation pyrometer for measuring kiln burning zone temperatures, consisting of a circular recording chart and an optical sighting head with rear sighting lens.
5. A Leeds & Northrup recording potentiometer system for recording exit gas temperature, consisting of a circular chart-type indicating recorder with an adjustable alarm horn and thermocouples.
6. A Leeds & Northrup kiln-speed indicating recorder system consisting of an indicating speed recorder and an electric tachometer for the kiln drive motor.
7. An electric, resetting kiln revolution counter.
8. An electric, resetting kiln feeder revolution counter.
9. A 12-in.-dial self-starting electric clock.
10. A set of controls for the air-quenching clinker cooler, consisting of a Hays draft gauge used as a cooler air flow meter, a hand-operated cooler fan



The two dust collectors, each with eight cyclones, and their fans, which reclaim stack dust from the old kilns.

The portable conveyor for loading sacked cement into trucks. The packer, two 100-bbl. storage tanks, and their air feeders are at the right.



The new cement storage silos and packhouse, with the old installation in the background. The ten new silos hold 110,000 bbls.

damper controlling indicator, a dual draft gauge, a manual cooler speed controller, signal lights, starters, and push buttons.

11. An elapsed time indicator.
12. A set of Brown Instrument Co. controls for the coal mill, including a 2-pen recording thermometer, remote primary air and feed regulators, a 2-point draft gauge, starters, pushbutton stations, and an a.-c. ammeter.

The air-quenching cooler and all clinker conveyances are electrically interlocked with the kiln drive. This eliminates any clinker pile-up due to machine failure.

Finish Grinding

No attempt is made to separate the two clinkers in the clinker storage building, which is an 80- by 192-ft. concrete and steel structure. An overhead electric traveling crane with a 3-cu. yd. clamshell bucket is used for handling the clinker. The same Perkins bucket conveyor carries the clinker from storage to the finish-mill feed bins. A table feeder supplies gypsum from storage to the same bucket conveyor.

It has been stated that no changes were necessary in the finish-grinding department as its 5,000-bbl. daily capacity was ample. The clinker and gypsum are first fed into two Bradley Hercules mills equipped with .080-in. screen openings. Bucket elevators and screw conveyors feed their product into two 7- by 22-ft. Allis-Chalmers tube mills. The latter operate in closed circuit with two 16-ft. Sturtevant air separators, each circuit producing 100 bbl. per hr. of finished cement. Type I cement is being ground to a fineness of 1,750 cm^2/gm. The Hercules mills are driven by 350-hp. and the tube mills by 400-hp. Allis-Chalmers motors, all through Cutler-Hammer magnetic clutches.

Storage and Packing

A new 7-in. Fuller-Kinyon pump feeds the cement to the six original silos, with a combined capacity of 100,000 bbls. including interstices, and a take-off across a bridge to the ten new silos, with a combined capacity of 110,000 bbls. The new MacDonald silos are each 26 ft. in diameter by 103 ft. high and are in two rows of five silos each. Cement is reclaimed from them by two 8-in. Fuller-Kinyon track-mounted portable pumps, one under each row of five silos. These feed to the two packing installations in the new packhouse. Each installation consists of two 100-bbl. steel storage tanks on the main floor of the building. Fuller-Huron Airfeeders and a Fuller-Huron Airslide conveyor take cement from these tanks to a bucket elevator discharging to a 36-in. Stephens-Adamson fully-enclosed revolving screen which removes lumps, and another Airslide feeds the bin over the packer which is equipped with a Bindicator to insure a constant supply. Any excess material automatically flows back into one of the recirculating tanks. A similar system feeds the other St. Regis 4-tube packer. Each packer has a complete control panel with pushbuttons and lights controlling each unit in the flow.

Each circuit is connected to a Sly bag-type collector which collects all dust from spillage at the packer and other points and feeds it to the Airslide ahead of the packer bins.

The bags are discharged from each packer onto a chain-link conveyor with Cyclone wire. This is reversible and feeds at one end to hand trucks for car loading. At the other end, for truck loading, the bags are discharged on a 2-section Flexoveyor portable conveyor on pneumatic tires. This can be extended to a total length of 27 ft. for loading even the longest trailers.

The second floor and the basement of the new packhouse are used for bag storage. As the relative humidity in this area is low except in the Spring, the paper bags often become dry and brittle and would sometimes break while being filled. In order to eliminate this nuisance, humidifiers made by the Bahnson Company of Winston-Salem, N. C., have been installed on the two bag storage floors. The unit in the basement consists of an evaporator which creates a fog and blows it through a copper duct with side vents for directing the moisture in all directions. A collecting pan under the unit catches condensed moisture. The unit on the second floor is a centrifugal humidifier.

The old packhouse also has two 4-tube St. Regis valve bag packers. With both packhouses in operation, four cars can be loaded with bagged cement and three with bulk cement at the silos at the same time. Most of the cement produced at this plant is shipped by rail.

Plant Control

The control system used at this plant is so complete that it would be almost impossible to produce a substandard batch of cement. The slurry at the blending tanks is sampled and analyzed every hour to determine the raw mix. The blended slurry in the storage tank is checked every 8 hours to check on the mix. The slurry is also sampled just ahead of the chain section of the kiln once every hour. If the moisture content is kept between 3 and 4 percent at this point, maximum fuel efficiency and kiln capacity are obtained without burning the chains or causing excessive dust loss. The clinker is sampled at the cooler discharge every 2 hours and is checked for burning by liter weights. A composite clinker sample is also made every 24 hrs. The product of each finish mill is sampled every hour. A complete bin analysis, autoclave and all, is made every time a silo is filled, and every car is also sampled as it is loaded.

Miscellaneous

About half of the power used in this plant is generated from steam produced in the waste-heat boilers connected to the two old kilns. Allis-Chalmers turbine generators supply 2,300-v. current.

The purchased power comes in to a new 3,750-kv.-a. Allis-Chalmers transformer owned by the plant. This reduces the 26,000-v. current to 2,300 v. for the large motors, and secondary transformers in various parts of the plant reduce it further.

Greater power requirements for the expanded capacity necessitated changes in the power supply and distribution systems.

A 16- by 42-ft. annex was added to the original power house to take care of the new electrical installations.

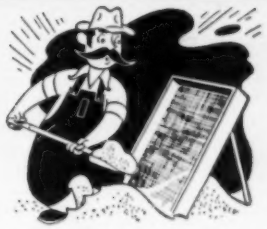
Twelve 2,300-v. distribution circuits were installed, and Allis-Chalmers metal-enclosed switch gear protected by General Electric time-over-current relays were used. Low-voltage distribution consists of eleven circuits protected by Allis-Chalmers G-50 500-amp. circuit breakers.

New Allis-Chalmers rocking contact voltage regulators with cross current compensation were added. The output of the two generators is connected to a Westinghouse Type RI-2 recording kv.-a. demand meter. A power factor of 99.9 is maintained on purchased power.

Water for all purposes is obtained from three artesian wells on a hill ½ mi. west of the plant and at an elevation 100 ft. above that of the power plant floor. This 52-deg. F. water goes to a catch basin and overflows into a creek. It is used for makeup water, cooling the kiln bearings, drinking, etc. That used in the boilers is first treated. In addition to the new rotary compressors already mentioned, there are four 350-

(*Continued on page 143*)

Screenings



by William M. Avery

AS another crowded convention season barrels down upon us, we're a bit depressed by the realization that not one of our associations has enacted any of the reforms which this column has proposed from time to time. Ventilation standards in meeting rooms still make the Black Hole of Calcutta seem like a health resort, and

the guy who engraved the Lord's Prayer on the head of a pin still appears to be turning out the typewriters used for filling in names on identification badges. If you see some one decked out in a gas mask and sporting a pair of six-power binoculars at the affairs this winter, it'll be us.

Double Jeopardy

A FELLOW up in Minneapolis landed in jail the other day, charged with having tossed a 55-lb. concrete masonry unit through a window of his former father-in-law's home. No doubt the local chapter of the mason's union will want to know if he complied with their rule requiring that a helper be employed on jobs involving units weighing more than 30 lbs. That's a lot more serious aspect of the affair than any old charge of malicious mischief or disturbing the peace.

Soup to Nuts

AMONG the multitude of uses of crushed and broken stone covered by a recent Bureau of Mines statistical release are the following: calcimine, chewing gum, explosives, phonograph records, picture-frame moldings, tooth paste, athletic-field marking, light bulbs and motion-picture snow. Only thing they omitted, so far as we can detect, is Indian arrow heads. At the rate Hollywood grinds out horse operas, that ought to be at least as important a market as motion-picture snow.

Bridal Party

FROM "Hoosier Detours" in the Muncie (Indiana) *Evening Press:*

"Take 90 barrels of crude oil, a concrete mixer, and truck loads of watermelons, tomatoes, and fertilizer, mix well, and you have a mess. It

seems three trucks collided on a bride (*sic*) near Vincennes when one of the trucks stopped to permit the concrete mixer to unload its contents. State policemen investigated the wreck ankle-deep in the assorted goo."

Come, come, now, what about that little old bride?

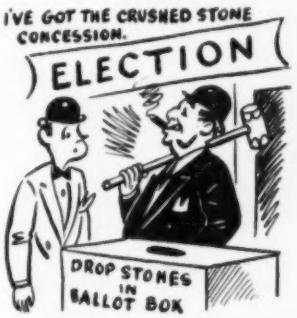
Never Lets You Down

THE Washington, D. C., *News* reports that three employees of the Super Concrete Corp. and a Smoot Sand & Gravel Co. shipping clerk were found guilty in Municipal Court of stealing 114,000 lbs. of sand, gravel and cement. The item bears the headline "This Wasn't Sneaked Out in Any Brassiere", a reference, presumably, to the much publicized case in Miami in which girl employees robbed the local 'phone company of thousands of dollars by hiding rolls of coins in their brassieres.

While we do not pretend to be authorities on the subject, we would hesitate to say flatly that 114,000 lbs. of sand, gravel and cement *couldn't* be stolen in this fashion. True, it might be an uncomfortable process, but the capacity is certainly there.

Crushed Ballots

SPEAKING of unusual uses for stone, we've just been reading about an interesting election in which the tribesmen of an isolated Upper Nile province selected their first district council. Each candidate laid his spear alongside an empty gasoline tin, whereupon the voters



walked up one by one, each dropping a stone in the tin of his choice. Later the headmen of the tribe counted the stones to determine which candidate had won.

The system undoubtedly works fine in the Sudan, where they probably haven't developed techniques for stuffing ballot boxes, but it would never do to use it here in the United States. First thing you'd know some smart candidate would plop his spear down alongside a jaw crusher, disguised to look like a gasoline tin, and he'd wind up with three times as many votes as there were voters.

Report on Current Labor Developments

By S. HERBERT UNTERBERGER
Director of Research
Labor Relations Information Bureau
Washington, D. C.

Cost-of-Living Wage Adjustments

another P-Q exclusive

THE Bureau of Labor Statistics has just issued a report on *Recently Bargained Cost-of-Living Wage Adjustments* which merits the attention of every employer. According to that report, so-called escalator clauses, which require that specified wage adjustments be made according to changes in the cost-of-living, covered almost 500,000 workers prior to the Korean crisis. In the three following months, July-September, 1950, an additional 300,000 workers were covered by those provisions, and the number is growing every day.

The Korean crisis produced many economic uncertainties. Workers feared price rises, and employers feared a shortage of skilled workers. With these fears in the background, many employers and unions agreed that cost-of-living increases would be to their mutual advantage.

The parade was led by the General Motors Corporation, which agreed to a 1-cent-an-hour adjustment in wages for each 1.14 point change in the Bureau of Labor Statistics Cost-of-Living Index, which is more properly called the "Consumers' Price Index for Moderate Income Families in Large Cities". Between July and September, 1950, practically every automobile manufacturer except Chrysler and Hudson agreed to the same cost-of-living increase.

The effect was felt far beyond the automobile industry. Two railroad unions settled their lengthy disputes in September by agreeing to a cost-of-living provision which gave a 1-cent increase for each 1 point rise in the Consumers' Price Index beyond the figure of 174.0. This is somewhat more liberal than the General Motors arrangement. The fact that it does not take effect until the index has reached 174.0 means very little since in September, 1950, the index had already reached 173.8.

In New York City, the building trades also agreed to a cost-of-living adjustment, as follows: if the cost-of-living index for New York City rises by more than 10 percent between June, 1950, and October, 1951, the percentage in excess of 10 percent shall be multiplied by the hourly rate and then corrected to the nearest multiple of 5 cents.

The Bureau of Labor Statistics sets down certain considerations which must be taken into account when working out a cost-of-living provision. They are:

1. It is essential that the cost-of-living index to be used in adjusting wages be specifically designated. Generally, the Bureau of Labor Statistics Consumers' Price Index is designated. That Index is available monthly for the United States as a whole or for each of 10 cities. It is available quarterly for 24 additional cities.

2. A base point must be selected. Generally, the index for the month when the agreement becomes effective is used. However, there are other possibilities. Occasionally, some future time is selected for the base point.

3. The wage change which is to be made for certain changes in the Index must be determined. The arrangements described above are only a few of the possibilities. Additional examples are clauses which provide for a 50-cents-a-week change for each 1 point change in the index, or wages changed by the same percentage as the change in the index, or a 1-cent-an-hour change in wages for each full point of change in the index, etc.

4. Escalator clauses may put a "floor", a "ceiling", or both on the amount of the automatic wage adjustments.

5. Cost-of-living adjustments are generally made quite frequently. Most adjustments are made once every three months.

The Bureau of Labor Statistics report does not take up the question of the wisdom of cost-of-living wage adjustments. While many employers are agreeing to such adjustments, many others are seriously concerned about them. They are worried about the precedent being established by the wide use of cost-of-living wage adjustments. Thus far, employers have rarely conceded that a wage increase is in order every time the cost of living rises. Others are worried about the inflationary implications of such increases. They point out with much merit that these arrangements amount to built-in inflation. Finally, many employers are concerned that their prices may be frozen while escalator clauses will still call for wage increases.

Wage-Hour Law Violations

Every once in a while something dramatic happens to remind employers that the Wage and Hour law has very sharp teeth in it. In two recent cases, violation of the Wage and Hour law has cost the employers dearly.

In one case the employer was found guilty of hindering the government's investigation of his violations by resorting to what the court called a "trick, scheme, or device". In this case, the court found him guilty not of the Wage & Hour law but of the U. S. Criminal Code, which makes it a punishable offense to "knowingly and willfully falsify or conceal or cover-up by any trick, scheme, or device a material fact or make or cause to be made any false or fraudulent statements or representations" in any matter within the jurisdiction of any agency or department of the United States. In this case, the employer faces the possibility of five years' imprisonment and a $10,000 fine.

In another case an employer was enjoined in 1941 from continuing certain practices which were regarded as violations of the Wage & Hour law. He fought the injunction up to the Supreme Court. During the years of litigation he continued the practice which had been judged illegal. In 1950, the Supreme Court finally ruled against him and ordered him to pay all past and present employees back wages which had accrued to them through the entire nine year period since the injunction was issued.

Discharge for Refusal to Cross Picket Line

May an employer discharge an employee whom he has sent on an errand to the premises of another employer if the employee refuses to cross a picket line at the other employer's place of business? This question came before the National Labor Relations Board recently. The Board's answer was that such an employee may not be discharged. The Board ruled that the employee was not discharged for insubordination but rather because he was helping a labor organization. Discharge for union activities is regarded by the law as a discriminatory discharge and therefore illegal.

• Here a jet-piercing blowpipe is being used to pierce secondary blast holes in granite. The cutting head has already entered the rock face, and the sliding shield is protecting the operator from spalled rock particles and steam.

• This two-wheeled trailer, containing all the equipment needed to operate the jet-piercing blowpipe, was used in field tests. The 70-in. stainless steel blowpipe is at the left, leaning against the control panel of the trailer.

Jet-Piercing Blowpipe Makes Good in Tests

A jet-piercing blowpipe light enough to be held in the operator's hands is now being used to pierce small blast holes in sandstone, quartzite, and granite. It is a product of The Linde Air Products Company, which recently completed a year of field testing with this newest jet-piercing unit.

In the field test speeds from 50 to 60 f.p.h. were reported in piercing Dunbar sandstone. The piercing speed on quartzite averaged 47 f.p.h., and speeds ranging from 22 to 25 f.p.h. were achieved in piercing granite.

The blowpipe, the FSJ-1, is designed for piercing secondary blast holes at any angle. The maximum depth of the holes made by the standard model is 5 ft., and the holes can be loaded with 1⅛-in. diameter dynamite sticks. Longer models, specially ordered, will make holes 7 or 9 ft. deep with proportionately larger diameters.

The holes are pierced by a supersonic-velocity flame of high temperature. This temperature, approximately 4,000 deg. F., causes the rocks to spall. The velocity of the flame, 6,000 to 6,500 f.p.s., plus steam produced by water sprayed from the torch nozzle, blasts the spalled rock particles out of the hole before they can melt.

The ability of rocks to spall governs piercing speeds. Rocks that will melt under the high heat of the blowpipe will not be pierced as fast as sandstone, quartzite, granite, and other high-silica rocks. The high melting points of these rocks make them particularly suited for piercing.

A mixture of oxygen and either kerosene or fuel oil is burned by the blowpipe. The liquid fuel and gas enters the rear of the blowpipe through needle valves under a pressure of 150 p.s.i. In a combustion chamber at the front of the blowpipe the gas and fuel are mixed, vaporized, and burned. The burning gas is ejected from a divergent nozzle, one with an expanding taper, and this causes its high velocity.

Water enters the rear of the blowpipe through a third needle valve. It is released through a nozzle spray cap on the nozzle. This water spray turns to steam in the hole and together with high-speed products of combustion clears the pierced hole.

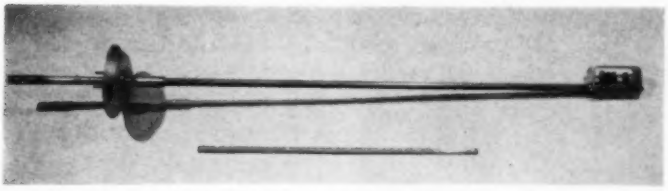
A hole-sizing shell, also located at the nozzle end of the blowpipe, breaks up accumulations of spallings and sizes the hole to the proper diameter.

Behind the nozzle is a sliding shield which protects the operator from steam and ejected spallings. Four attached fins keep the shield clear of the hole and a simple spring loading arrangement permits it to slide along the stainless steel handle as the hole becomes deeper.

Under average conditions the blowpipe burns 520 cu. ft. per hour of oxygen and approximately 4 gal. per hour of fuel. It also uses 50 gallons of water per hour. Supply units to furnish the oxygen, fuel, and water are usually constructed by the user to fit his particular needs. The average setup also includes a 200 p.s.i. gasoline power compressor to pressurize the water and fuel tanks, unless compressed air is already available.

The manual jet-piercing blowpipe is simple to operate. An inexperienced man can learn to use it with proficiency in a relatively short time. It is also safe in operation, and no special safety precautions are required. Only the usual safety measures, such as clear glass goggles, gloves, and safety high shoes or leggings are necessary.

Low operating and maintenance costs, combined with high piercing speeds, recommend the FSJ-1 blowpipe as a possible solution for the secondary blasting problems of pit and quarry operators.



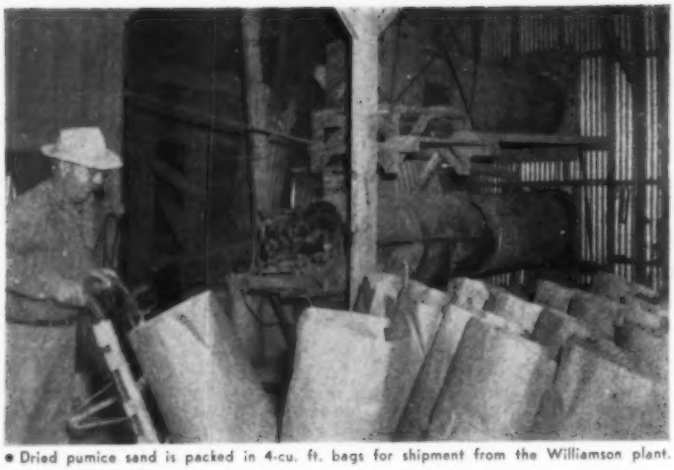
• A closeup of a manually-operated blowpipe. Fuel, oxygen, and water intake valves are at the right, and the extended taper nozzle, covered by a hole-sizing shell, is at the left. The sliding shield, which protects the operator, is just behind the nozzle.

$10,000,000 Facilities Planned By Southwest Potash Corp.

Officials of the Southwest Potash Corporation announced that plans had been completed for the construction of a plant and a mining shaft near Carlsbad, N. M., to boost the production of potash in this area by 185,000 tons per year. Cost of the proposed facilities will be about $10,000,000. It was stated that operations will begin by the end of 1952.

Southwest Potash will be the fifth firm in operation in New Mexico's Permian basin, said to be the world's largest source of high-grade potash.

Reports from Washington, D. C., revealed that the cement shortage there had forced builders to import supplies from Germany at premium prices. One Virginia firm purchased 5,400 bags at a price about 40 percent above that of American cement.



• Dried pumice sand is packed in 4-cu. ft. bags for shipment from the Williamson plant.

Oregon's Pumice Industry

(*From page 90*)

Constituent	Percent
SiO_2	73.49
Al_2O_3	16.39
Fe_2O_3	1.22
CaO	1.08
MgO	0.01
Na_2O	2.84
K_2O	2.10
Ignition loss	2.23
	99.36

Capacity of the Williamson plant is 75 cu. yds. per hr. Don Fahey superintends both pit and plant.

The Volunteer Portland Cement Company, Knoxville, Tenn., expects to complete its $1,00,000 plant expansion and equipment rehabilitation program by January 1. Completion of the company's improvement program will permit a 60 percent production increase, with a total output of 2,000,000 bbls. annually.

Jellico Lightweight Aggregate Company, Jellico, Tenn., is a recently organized company for the manufacture of lightweight aggregate used in construction. Operations began last October in a new $80,000 plant. Officers include D. A. Dulworth, president and H. P. David, vice-president and plant manager.

Venezuelan cement production reached a new peak this spring with a March record of 43,658 tons. The March total is higher than the entire year's production in 1934, 1945, 1946, 1938, and 1939. The first quarter production showed an 80 percent increase over last year's volume.

Four large deposits of asbestos ore have been discovered in Central Serbia. One of these beds extends over 10 kilometers and contains long-fibered asbestos similar in quality to that of the famous Canadian deposits.

Exports of mica, one of India's best dollar earners, were 27 percent higher during the first half of 1950 than in the second half of 1949. The total export for the first six months of 1950 was 17,147,900 lbs.

It has been announced that a permit was issued to the United States Gypsum Company for the erection of a $75,000 one-story warehouse on the Schuylkill River in Philadelphia.

Smithwick's $250,000 Plant

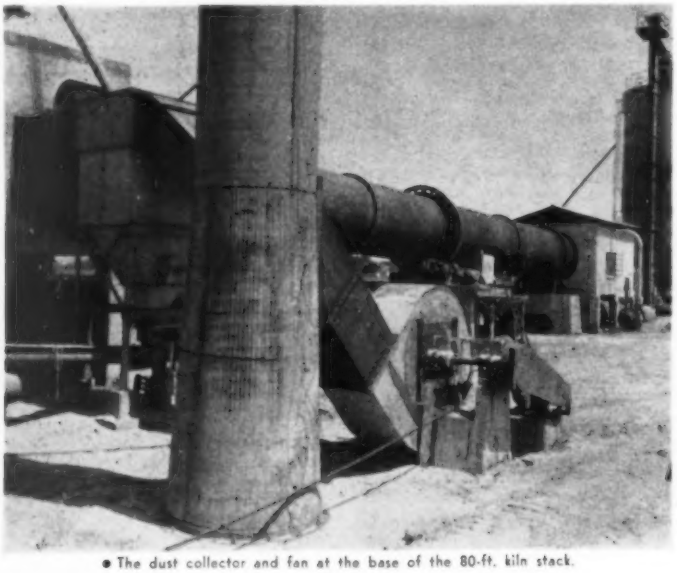
(*From page 124*)

fabricated by the Willamette Iron & Steel Company of Portland. All 25 motors were supplied by General Electric, and the contract for the erection of the major equipment was let to the Oregon Erecting Co.

S. Carl Smithwick is president and general manager. He was for many years district engineer of the Portland Cement Association at Spokane. Otto C. Frei, executive vice-president, designed the haydite plant, supervised its construction, and now manages its operation. He was chief chemist and later, president, of the former Washington-Idaho Lime Products Company of Orofino, Idaho.

Paul P. Klemens, vice-president, manages production at the Portland concrete-products plant. He formerly served as sales engineer with the Besser Manufacturing Company, Alpena, Mich. Lane W. Wilcox, is vice-president and manages the Eugene concrete-products plant.

Publicity-wise Pres. Smithwick took good advantage of the start up of haydite plant operations by staging an impressive dedicatory ceremony in the late afternoon and early evening of April 21, 1950, on the premises. Honored guests included Gov. Douglas McKay of Oregon, who formally threw the switch which started the big kiln rolling, and Mayor Dorothy McCullough Lee, of Portland, who broke the traditional bottle of champagne over one of the kiln tires. A dinner in the banquet room of the company's impressive office building followed, with places set for 50 guests.



• The dust collector and fan at the base of the 80-ft. kiln stack.

South Dakota Cement Plant

(*From page* 138)

c.f.m. Ingersoll-Rand compressors in use.

There are some interesting and unusual features in the concrete construction of the plant. The two new slurry storage tanks, each 70 ft. in dia. by 27 ft. high, were built with 12-in. prestressed concrete walls instead of the 21-in. reinforced concrete which would ordinarily have been used. These walls were first poured with no reinforcing. Each tank was then prestressed with 54 continuous miles of 3/16-in. piano wire by the Preload Corporation of New York City. This wire was wound continuously around the tank under very high tension and each layer was then coated with Gunite. Successive layers of wire were then applied, each ending lower down to give greater strength where the pressure is greatest, and each layer was coated with Gunite. No cracks or leaks have appeared on any of these tanks; one of them was even used for oil storage without leaking.

Another feature of interest was the record set in pouring the ten new 26-ft. interior dia. by 103-ft. high cement silos. The Macdonald slip-form method was used to complete this job in the remarkable pouring time of 115 hrs.

Organization

The South Dakota Cement Plant is under the direct supervision of the four-man South Dakota State Cement Commission. This is composed of J. D. Davenport, chairman; John D. Wilson, secretary-treasurer; E. Heilman; and E. H. Kuhlman.

The commission is the policy-making and directing group; and the business management, sales and operating executives of the plant work under its direct control. The commission meets once every month with these executives for a careful review of the affairs of the plant.

The staff which is directly responsible for the operation of the plant and other important functions includes: Frank Gardner, general manager; Roy W. Shore, sales manager; Ralph Basler, superintendent; Robert Mower, chief chemist; and H. E. Palmer, quarry superintendent.

Washington News

(*From page* 126)

the point where 75 percent of its earnings are taxed away, it might just as well spend lavishly, since in effect the federal government is paying three-fourths of the bill.

In this connection, there is an interesting angle. The labor unions have been among the most vigorous supporters of the excess profits tax. In part, they believe that corporation earnings are too high. They hope that if corporations are taxed heavily, the taxes on workers can be lighter. However, they also know that if there are excess profits taxes, it will be easier to get wage increases. Corporations subject to the excess profits tax will feel a wage increase is a good idea if it can assure labor peace or insure an adequate supply of scarce manpower. After all, Uncle Sam is paying for 75 percent of it.

personal mention

R. H. B. Smith

R. H. B. Smith has been elected a vice-president of the Lawrence Portland Cement Company. He will be in charge of sales and make his headquarters at the company's executive offices, 150 Broadway, New York, N. Y.

Mr. Smith has been sales manager for Lawrence's Dragon brand cements in the New England Divisions, with offices in Boston, since 1943. His new duties call for direct supervision of all company sales, with jurisdiction over the district offices maintained in Thomaston, Me., Boston, New York, N. Y., New Jersey, and Philadelphia.

Before joining Lawrence, Mr. Smith was associated with the Universal Atlas Cement Company.

Charles E. Shearer, formerly executive vice-president of the Keystone Portland Cement Company, Philadelphia, Pa., recently succeeded Harold M. Scott, president since 1930, as president of the firm. Mr. Scott was elected chairman of the executive committee.

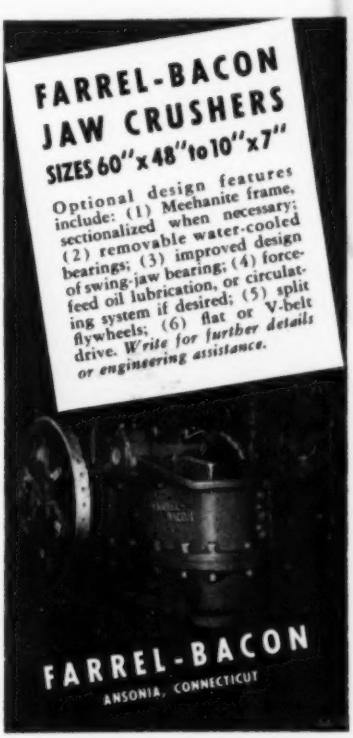
At the same time Thomas Barnes II was elected chairman of the board, succeeding the late William C. Fownes Jr.

A. L. R. Sanders was re-elected president of the Illinois Section, American Society of Civil Engineers at the organization's annual meeting in Chicago last December. Mr. Sanders is chief engineer for Hazelet and Erdal, consulting bridge engineers, and has been serving as president of the society since the death of O. K. Jelinek, former airport consultant for the City of Chicago.

I. C. Hamilton is now superintendent of western Ohio plant operations of the Fenton Construction Company, including sand and gravel plants at Troy and Piqua, the ready-mixed concrete plant at Troy, the concrete products plant at Troy, and asphalt plants at Troy, Urbana, and Fort Jefferson, O. He succeeds J. S. Reddick, who left the company.

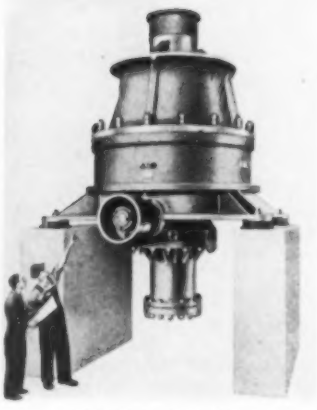
Mr. Hamilton has been associated with the company since leaving Illinois Institute of Technology in January, 1948. He is a veteran of four years' service in the U. S. Navy during World War II.

Boyce M. Martin, vice-president and treasurer of the Louisville Cement Company, was elected to the board of directors of the corporation. He replaces the late H. D. Baylor.


FARREL-BACON
JAW CRUSHERS
SIZES 60"x48" to 10"x7"
Optional design features include: (1) Meehanite frame, sectionalized when necessary; (2) removable water-cooled bearings; (3) improved design of swing-jaw bearing; (4) force-feed oil lubrication, or circulating system if desired; (5) split flywheels; (6) flat or V-belt drive. Write for further details or engineering assistance.
FARREL-BACON
ANSONIA, CONNECTICUT

A Review of

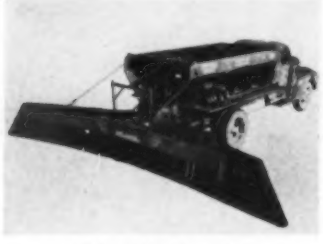
New Equipment Developed in 1950



"Hydrocone" Crusher.

ALLIS-CHALMERS MANUFACTURING CO., 971 S. 70th St., Milwaukee, Wis., announces that "Hydrocone" crushers have been improved and extended with the inclusion of 51-, 60-, and 84-in. units for the preparation of crushed stone aggregate.

Designed for secondary and tertiary crushing, the Hydrocone includes a wobble plate feeder; a new dust seal for the main eccentric bearing; mantles and concave rings of "Mantalloy" to reduce wear; and finer crushing chambers designed for the production of large tonnages of fine material.



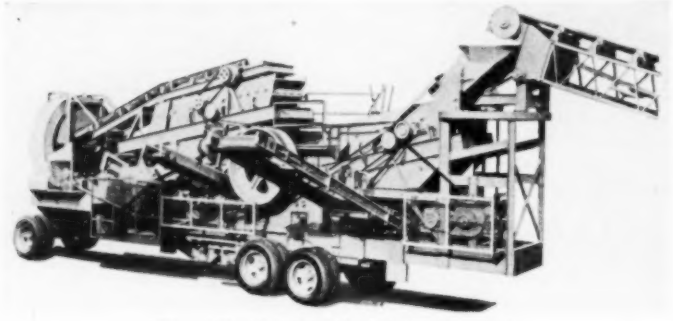
Highway Lime Spreader.

HIGHWAY EQUIPMENT COMPANY, INC., Cedar Rapids, Ia., is manufacturing a combination lime and fertilizer spreader.

A separate engine powers the distributor discs to give full width and uniform spread regardless of truck speed. The quantity per acre is regulated by a conveyor which is powered from the truck drive shaft and which controls the quantity supplied to the discs at any truck speed. A slanted and tapered hood aids in uniform distribution and reduces the effect of wind disturbance.

B. F. GOODRICH COMPANY, Akron, O., has developed a new high-capacity multiple V-belt that is claimed to give a 10 percent increase in horsepower rating over comparable standard V-belts.

The increase in capacity has been effected without stiffening the belt or reducing any of the safety factors inherent in the standard type. The new type permits the use of fewer belts to gain the desired power.

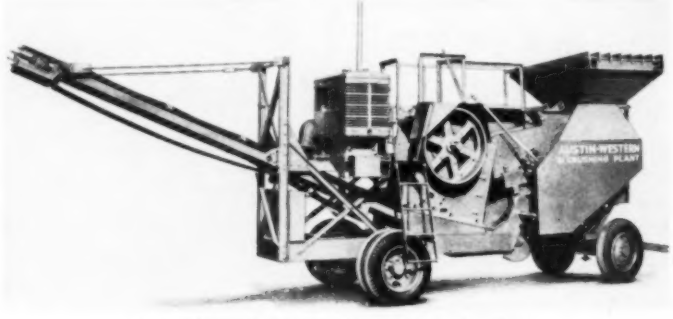


"Gravel-King Twin-Dual" Portable Crushing Plant.

UNIVERSAL ENGINEERING CORPORATION, Cedar Rapids, Ia., has designed a new addition to its "TwinDual" series of portable plants. The "Gravel-King" features three stages of crushing with scalping screen feed. It is available in two sizes.

A pre-screening operation sizes and removes natural sand and gravel. Large boulders are scalped to the large-opening primary. Material requiring secondary reduction is by-passed to the TwinDual roll crusher for the second and third stages of crushing. 100-percent chips can be produced, or finished material from the scalping screen blended with crushed material.

The plant is also designed for conversion to quarry operation in the field. An apron feeder is interchangeable with the scalping screen for quarry rock.



Austin-Western Portable Crushing and Screening Plant.

AUSTIN-WESTERN COMPANY, Aurora, Ill., offers the "61", a portable crushing and screening plant designed for fast, economical production where extreme grading accuracy is unnecessary. It is easily portable and compact.

B.F.Goodrich

The tire that should lose but doesn't

WHEN water, sharp rocks and rubber start fighting—it's usually the tire that has the handicap. The water acts as a lubricant, causing the tires to spin — while the sharp rocks cut at the slipping rubber.

But the BFG Rock tires shown above are an example of how B. F. Goodrich builds tires to lick tough problems.

To resist cutting, these tires have a special, tough tread—compounded for rock service. To resist slippage, the heavy cleats on the shoulders are non-directional . . . they dig in for a non-slip bite, in forward or reverse. To give real shock protection to the cord body, these and other B. F. Goodrich off-the-road tires have a patented *nylon shock shield* (double in larger sizes).

Found only in BFG tires, the shock shield is made of two nylon cord breakers. This is vulcanized between the tread and cord body to protect the life of the tire against the shocks of hard service.

The Wallowa County Road Department office in Enterprise, Oregon, operators of the equipment shown above, have this to report: "The B. F. Goodrich tires have given longer and better all-around service than any other brand we have used." In other words, the tire that's hard to cut is the tire that cuts costs.

Whatever job your off-the-road equipment must perform, there's a special BFG tread built to help you do it better. In addition, you get the exclusive protection of the nylon shock shield at no extra cost.

So see your B. F. Goodrich dealer. And specify BFG tires for your new equipment. Enjoy the longer life and lower operating costs offered you by *The B. F. Goodrich Company, Akron, Ohio.*

RESEARCH KEEPS
B.F.Goodrich
FIRST IN RUBBER

New Equipment

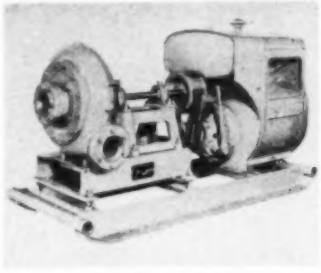
Atlas Portable Conveyor.

ATLAS CONVEYOR COMPANY, Clintonville, Wis., has announced a new series of portable belt conveyor, the "Model 17." The conveyors are made in 30-to 60-ft. lengths and 18- or 24-in. widths. Capacities range from 75 cu. yds. Atlas can furnish either gasoline or electric powered models.

Syntron Hole-Cleaning Drill.

SYNTRON COMPANY, 385 Carson Ave., Homer City, Pa., announces the new self-rotating, hole cleaning gasoline hammer rock drill. In this new drill the rotation of the hollow drill steel and bit is accomplished by the orthodox method of using a spirally-splined piston and ratchet.

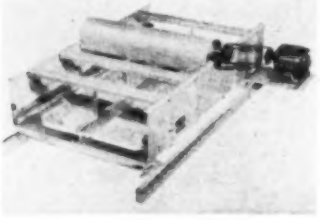
Exhaust gas is forced through the hollow drill steel to blow the cuttings out of the hole, down to a depth of approximately 24 in. For deep hole drilling, down to 8 or 10 ft., an auxiliary gas engine-driven blower is hose-connected to the hammer to boost the pressure through the hollow drill steel.



Kansas City Sand Pump.

KANSAS CITY HAY PRESS COMPANY, 801 Woodswether Road, Kansas City, Mo., has developed the "Lightning" engine-driven portable sand and gravel pump.

The new pump features a self-priming vacuum system that eliminates the need for foot valves. Liners and impellers are of "Hi-Chro-Hi," an abrasion-resisting metal. Replacement and inspection of wearing parts are easily made. Pumps are available in 4- and 6-in. sizes, powered by 30- and 77-hp. gasoline engines.



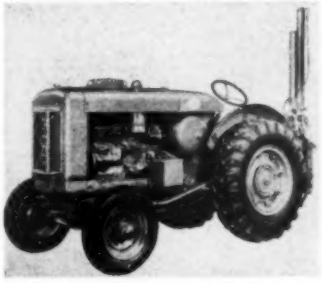
Universal Vibrating Screen.

THE UNIVERSAL VIBRATING SCREEN COMPANY, Racine, Wis., reports design improvements in its 1950 models which are said to increase capacity and efficiency. Greater compactness in construction has been achieved, reducing space requirements for the new models.

Joy Rotary Drill Rig.

Joy Mfg. Co., Henry W. Oliver Bldg., Pittsburgh 22, Pa., announced its new "Joy Champion" continuous blast-hole drill for dry drilling. According to the manufacturer, the cutting is done continuously with a rotating tri-cone roller bit, instead of with interrupted hammer strokes.

Special advantages claimed for the Champion are as follows: faster, more economical performance and longer bit life; ample drilling capacity; continuous removal of cuttings by air; no loss of holes started; smooth-walled holes; rapid setup; quiet operation; sturdy mounting on crawler treads.

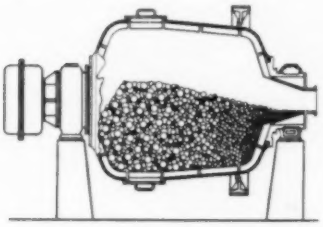


Schramm "Pneumatractor".

SCHRAMM, INC., West Chester, Pa., has developed the "Pneumatractor," a self-propelled tractor-mounted air compressor. The air compressor and the tractor are independently driven from the engine so that the operation of one does not affect the other.

Adding to the utility of the machine is the "Pneumajack," a device for mounting a rock drill, a backfill tamper, or a paving breaker on the rear of the Pneumatractor. This makes possible production drilling in quarries, road building, and other places with the minimum of machinery, and maximum of mobility.

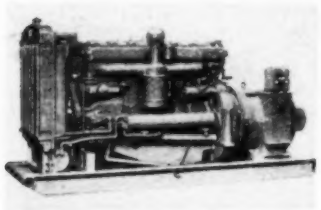
HARDINGE COMPANY, INC., York, Pa., has announced its new "Tricone" ball mill for wet and dry grinding and pulverizing. The important feature of the mill is its slightly tapered shape, which keeps the larger grinding balls at the feed end.



Hardinge "Tricone" Ball Mill.

Structurally, it consists of a conical or convex feed head; a short cylindrical section; a long tapered conical section; and a wide-angle conical or convex discharge head. Since it is basically a union of three truncated cones of varying degrees, the name "Tricone" was chosen. The cylindrical section is omitted entirely in certain cases.

Proper ball segregation is achieved as the larger balls remain at the feed end to crush the coarser incoming material; maximum energy is gained at the feed end, where the diameter is greatest and where the greatest crushing force is needed; the convex heads increase ball turbulence and eliminate dead corners; the nearly spherical shape provides maximum volume for minimum liner surface.



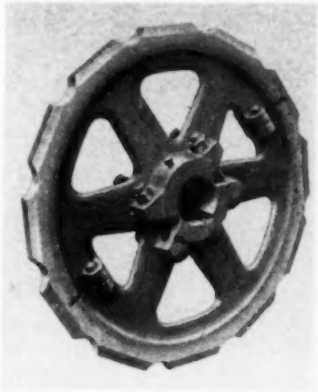
Murphy Diesel-Electric Generator.

MURPHY DIESEL COMPANY, 5307 Burnham Street, Milwaukee, Wis., expanded its line of diesel-electric generator sets to eleven models, ranging from 60 to 133 kw. All models comprise heavy-duty Murphy diesel engines and generators engineered as integral units and permanently aligned at the factory. The company also makes a complete line of diesel engines for power applications which has been improved during the past year.

Installation of the generator sets can be either portable or stationary since engine and generator are mounted on a single skid or frame. Voltage is controlled by a rapid acting voltage generator. Sudden load changes are accommodated by a micro-control hydraulic governor which maintains desired frequency and voltage with high accuracy.

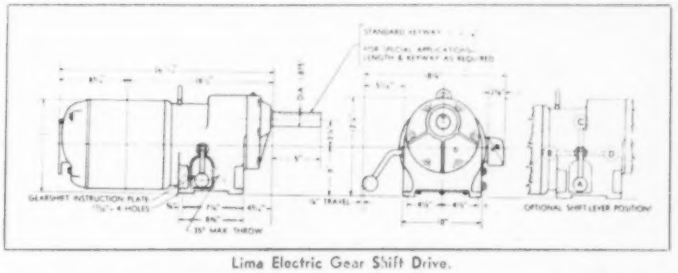
Mandt Hydraulic Swing Loader.

MANDT MANUFACTURING COMPANY, Columbus 8, O., has developed a swing loader of 5/8 cu. yd. capacity with a 180 degree swing. Operation of the bucket is by hydraulic cylinders which hoist, swing and dump. It can also be used as a crane with 200-lb. lift. It is said to be excellent for narrow spots, as only 15 ft. of width are needed for working.



JEFFREY MANUFACTURING COMPANY, Columbus, O., are making sprockets with "Ni-Hard" rims cast integrally into the sprocket rims. This is said to provide strength, toughness, and abrasion resistance. Saving in chain life and replacement costs are reportedly realized by the Ni-Hard sprockets.

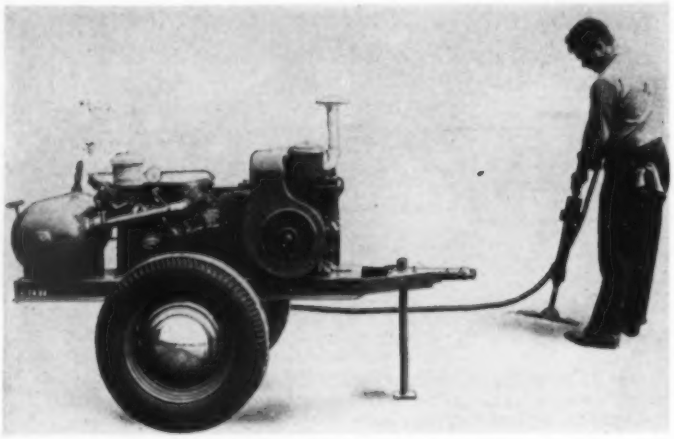
W. A. RIDDELL CORPORATION, Bucyrus, O., manufactures the "American" grinders in eight sizes for producing minus 5/8-in. aggregate, ground cinder, and clinker. Capacities range from 3 to 75 cu. yds. per hour. These grinders are also useful for reducing bauxite, dolomite, feldspar, fuller's earth, magnesite, mica, phosphate, cement shale, pumice, refractories, silica rock, slag, slate, etc.



Lima Electric Gear Shift Drive.

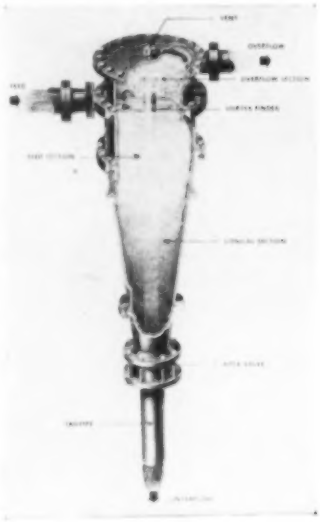
LIMA ELECTRIC MOTOR COMPANY, Lima, O., announces the addition of a new 5-hp. 1200 r.p.m. selective-speed gearshift-drive to their line. This new unit, designated as the Type R3AC, incorporates both primary and secondary gear reductions and is designed individually to motorize and drive machinery of various types that require a low range of selective operating speeds, combined with high radial load capacity.

New Equipment



Worthington "Blue Brute" Portable Compressor.

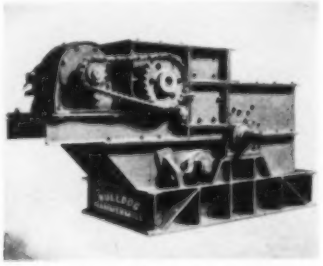
WORTHINGTON PUMP AND MACHINERY CORP., Harrison, N.J., has introduced two "Blue Brute" portable air compressors. Hand truck and trailer models are made. The compressors deliver 30 cu. ft. at 100 lbs. pressure. Power is from an air-cooled gasoline engine.



"DorrClone" Classifier.

DORR COMPANY, Stamford, Conn., has acquired exclusive rights to the "DorrClone" and "DorrClone System of classifying finely divided solids suspended in a liquid. The method was developed by the Dutch State Mines, Heerlen, The Netherlands.

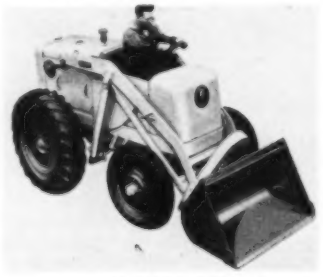
The DorrClone is a compact cylindro-conical classification unit which utilizes centrifugal force instead of gravity to accomplish the desired separation. It is similar in shape to the conventional dust-collection cyclones in general use today, but differs in that it is designed to operate on a liquid.



Hammermill's "Bulldog".

HAMMERMILLS, INC., division of Pettibone Mulliken Corporation, 4766 W. Division Street, Chicago 51, Ill., have announced new designs and improvements for their line of "Bulldog" moving breaker plate hammermills for crushing sticky or high-moisture content materials. Easily adjusted controls to produce variable size products and heavier shafts with anti-friction bearings are new features.

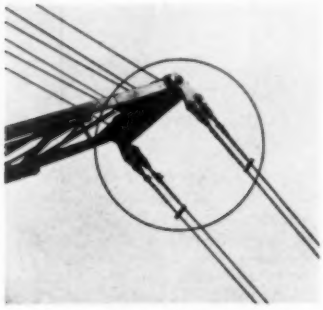
Special analysis steels are used in hammers, liners, breaker plates, and grate bars to resist excessive wear and abrasion, and to give longer service.



Hough "Payloader" Shovel.

FRANK G. HOUGH COMPANY, 750A Sunnyside Avenue, Libertyville, Ill., brought out a new model "HE" of the Hough "Payloader" tractor shovel, with a bucket of ½-cu. yd. capacity. The Hough line now includes five sizes, ranging from 12 cu. ft. to 1½ cu. yd.

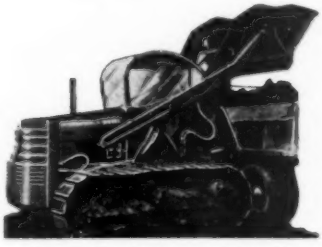
It has four forward and four reverse speeds, ball-bearing steering, hydraulic brakes, and shovel operation.



American Steel's Cable Assembly.

AMERICAN STEEL AND WIRE COMPANY, Rockefeller Building, Cleveland, O., has developed a "Tiger" brand cable assembly which is claimed to combat effectively severe vibration on power shovels, draglines, and cranes.

The thimble design embodies an interwoven eye and an open-end pendant which is interchangeable with standard open-end closed sockets. The design is said to dampen vibration and is especially adaptable to installations where fatigue failure occurs adjacent to sockets.



Service Supply's "Lodover" Shovel.

SERVICE SUPPLY CORPORATION, Philadelphia 32, Pa., is producing the "Lodover," a 1-cu. yd. overhead and front-end shovel for use on International Harvester tractors.

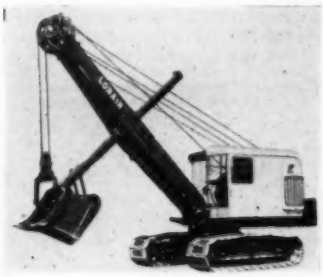
The unit is said to increase loading production substantially by eliminating turns. This also adds to crawler shoe and engine life. Output has been stepped as much as 50 percent on some applications, with less operator fatigue. The unit has the advantages of high-speed front-end loading, ease of operation in traffic and under obstructions, controlled down pressure for extra digging power, positive bucket control, and overhead operator protection, states the company.

HARNISCHFEGER CORPORATION, Diesel Engine Division, Port Washington, Wis., has developed a line of diesel engines designed to withstand heavy loads in the severest applications.

Harnischfeger Diesel Engine.

Built on the two-cycle principle, these diesels are available in 4-, 2-, 3-, 4-, and 6-cylinder models (all with bore and stroke of 4.5 x 5.5), delivering 24, 45, 65, 90, and 137 b.h.p. respectively at 1,400 r.p.m. These engines, all with a 16:1 compression ratio, are said to deliver from 7 to 17 percent more b.h.p. at 1,400 r.p.m. under intermittent load conditions. All models have forced feed lubrications, 4-in. main bearings, and 3-in. crank pins.

A patented cylinder head and liner assembly is used. Each cylinder has an independent power assembly unit, saving time on maintenance and overhauls. Only one valve is used, exhaust, due to the two-cycle type ported liner air intake. Fuel consumption for all models averages .45 lbs. per b.h.p.-hr.



Thew "Lorain-50" Shovel.

THEW SHOVEL COMPANY, Lorain, O., recently introduced the Lorain-50. This is a shovel-crane in the 1-cu. yd. class and is claimed to be the first machine in this bracket to be equipped with a hydraulic coupling as standard equipment.

The power take-off on the Lorain-50 is by means of a twin-disc hydraulic coupling. It is claimed this device prevents stalling the engine due to digging stresses and strains before they are transferred into the operating mechanism and the cables.

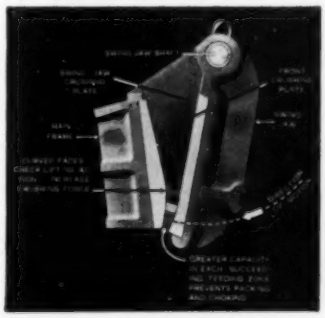
The standard power plant is a Caterpillar diesel 6-cylinder engine with separate gas starting engine which is equipped with an electric starter. A 6-cylinder gasoline Waukesha engine with hydraulic coupling is available as optional equipment.

Unit Crane and Shovel Truck Model.

UNIT CRANE AND SHOVEL CORPORATION, 6401 W. Burnham Street, Milwaukee 14, Wis., announces the development and production of two new truck cranes, models 1520T and the 1014.

The 1520T has a lifting capacity range to 20 tons, and ¾ cu. yd. in excavator service. It is mounted on a three-axle, tandem drive crane carrier.

A feature of this machine is the Bendix-Westinghouse air steering, which is standard on all 1520T models. Not only does this reduce the effort required for steering, but lends itself to the additional feature of one-man control. Offered as an optional installation, one-man control propels the machine from the engine in the upper structure through a vertical drive-shaft geared to a propelling shaft in the carrier.

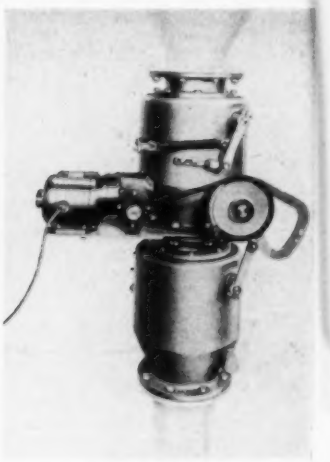


Traylor Curved Crusher Plate.

TRAYLOR ENGINEERING AND MANUFACTURING COMPANY, Allentown, Pa., claims to have cut power costs, reduced percentage of waste fines, and produced a more uniform, cubical aggregate, by using a curved surface in a unique type of jaw crusher plate.

The curves over the faces of the plates are so designed as to give each succeeding zone in the crushing chamber greater capacity than the preceding one, thus allowing free fall of the material as it progresses through the chamber.

ALLIED STEEL PRODUCTS, INC., Cleveland 5, O., is now producing a special alloy steel heat-treated plate. Its special uses are for the repair of construction, quarry and mine equipment. It reportedly has qualities which offer resistance to abrasion and impact. Tough and durable, it can be flame cut and welded with ease. Other advantages cited are ease of forming, drilling, shearing, and punching. The product is known as "Tufaloy" wear-resisting plate.

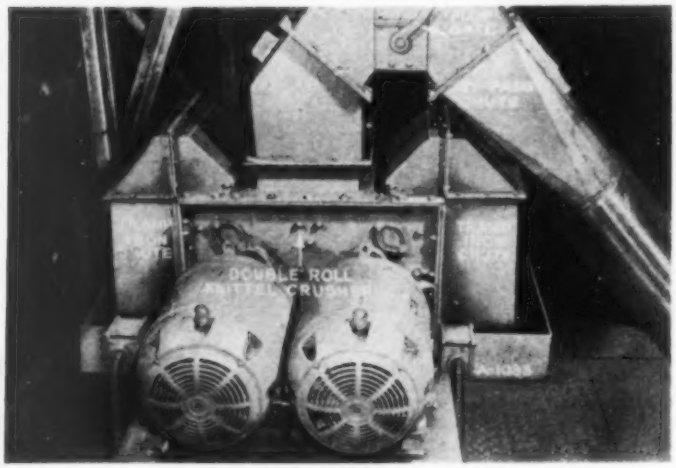


Buell Flow Hopper Valve.

BUELL ENGINEERING COMPANY, 70 Pine Street, New York 5, N.Y., has developed positive material flow hopper discharge valves for continuous use in unloading dust or powder in cement plants and chemical processing and allied industries.

According to the manufacturer, there is no danger of air in-leakage; and the closing shock of the valve disc automatically shakes loose all clinging material, insuring a steady flow and preventing any plugging tendency in the dust hopper. Only points of wear are in the bushings for cam and drive shafts, which can be simply replaced.

New Equipment



Stephens-Adamson "Double Rotor Knittel Crusher".

STEPHENS-ADAMSON MANUFACTURING COMPANY, Aurora, Ill., has developed a non-clogging crusher that has all the advantages of the standard Knittel unit. The "Double Rotor Knittel Crusher" is equipped with two separately driven rotors which first split the material by impact and then crush it on the breaker plates. Slots in the crusher grates determine size.

Beaumont "Beaucalloy" Chains.

BEAUMONT BIRCH COMPANY, 1505 Race St., Philadelphia, Pa., announces new, long-needed bucket elevator chain. These new Beaumont "Beaucalloy" elevator chains are made of heat-treated alloy steel.

Design features include: projecting guards which deflect material from chain joints; slotted boss ends which prevent the pin from rotating and protect the cotter pin; connecting pins of heat-treated alloy steel with a centerless, ground finish that greatly reduces friction; a single link barrel cast integrally with side bars and made of Beaucalloy steel; a barrel larger in size and 3/16 in. thicker on the side which receives wear from the connecting pin and wheel; and a special K-2 attachment which permits the use of either the new style Beaumont "Dove-tail" lock buckets or conventional type "A" buckets.

Chase "Sharkraft" Bag.

CHASE BAG COMPANY, 309 W. Jackson Blvd., Chicago 6, Ill., has developed a new all-crinkled multiwall paper bag, the "Sharkraft."

Although it resembles a regular smooth Multiwall in style and construction, the all-crinkled Multiwall bag's design gives it inherent longitudinal stretch. This quality is the result of using so called "wet creped" or secondary creped paper, containing approximately 12 to 15 percent stretch in the individual ply construction. Three-, four- and five-wall bags are produced by laminating the individual walls of crinkled paper together with a light coating of pliable adhesive. According to the company, a feature of these bags is their ability to expand and absorb shock and strain.

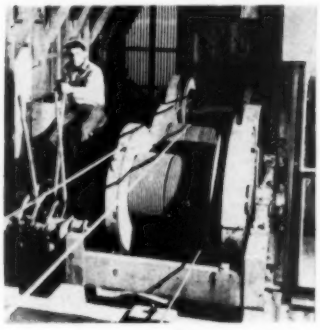
BUCYRUS-ERIE COMPANY, South Milwaukee, Wis., announces production of the new 22-B transit crane. The new wheel-mounted excavator has been engineered similar to its counterpart, the crawler-mounted 22-B.

Bucyrus-Erie Transit Crane.

A new crane-type boom for crane, clamshell and dragline operation, has been designed to combine strength and length. Inserts may be used to increase the 30-ft. boom to 80 ft. Long booms are quickly folded. Both hoist line and boom lowering are power-controlled to insure safety. Boom stops prevent raising beyond safe limits.

It may be converted in the field for shovel, dragline, dragshovel, clamshell or crane operation. In excavator service, the buckets and dippers are 3/4 cu. yd capacity.

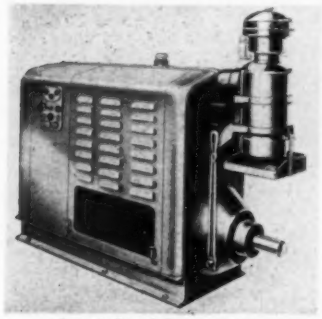
SAUERMAN BROS., INC., 534 S. Clinton St., Chicago, Ill., have developed an improved type of three-drum hoist especially for operating Sauerman rapid-shifting drag scraper machines.



Sauerman Three-Drum Hoists.

In general design features, these new hoists resemble the Sauerman standard roller-bearing scraper hoists. Drum shafts are stationary and are pinned to the side stands. Drum and gears are mounted on Timken roller bearings. The clutches are positively pushed into and pulled from engagement through double tapered bearings, no springs being used. Drive is through a silent chain, totally enclosed in an oil tight case. Brakes are on opposite ends of drums from the clutches, thus eliminating heating of one by the other. Gears and pinions are steel.

DETROIT DIESEL ENGINE DIVISION, General Motors Corporation, 13400 W. Outer Drive, Detroit, Mich., is manufacturing a new lightweight compact diesel engine for use where other types are too large or too heavy. The new engine is designated the "110" because of its 110 cu. in. displacement per cylinder. It is a 6-cylinder, 2-cycle unit rated at 275 hp.

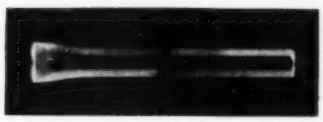


Detroit Diesel Engine "110".

Features include blower scavenging with a new and highly efficient gear-driven centrifugal blower furnishing more air for the cylinders than is needed for combustion.

GM unit injectors (one for each cylinder) pump, meter and atomize the fuel, and are easily removed for inspection or exchange.

The 110 is offered as a bare engine, with full equipment for marine or industrial use, or with special accessory arrangements for a variety of uses. Optional accessories, which may be powered directly from the gear train, include a hydraulic steering pump, an air compressor, and a pump to circulate oil through a torque converter.



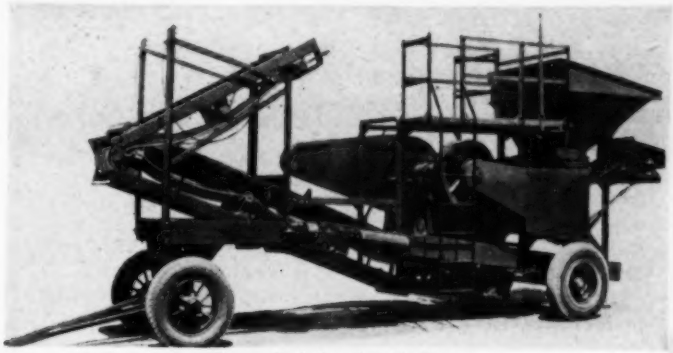
Rock Bit "Intraset" Drill Steel.

ROCK BIT SALES & SERVICE COMPANY, 2514 E. Cumberland Street, Philadelphia 25, Pa., is manufacturing the "Intraset" drill steel for small holes. The drill is available in sizes from 1¼ in. up, with carbide inserts and shanks for any hammer.

WINSLOW GOVERNMENT STANDARD SCALE WORKS, Terre Haute, Ind., offers the Type "S" motor truck scale and the "Contractors' Special" road material scale, available through distributors in all parts of the United States.

The Type S is designed for motor trucks, trailers, tractor trailers of 15-, 20-, 30-, and 50-ton capacity with platform lengths to 60 ft.

The Contractors' Special is suitable for weighing road material at job set-ups, stock piles, and crushing plants. It is readily transported and assembled.



Pioneer Single-Pass Portable Plant.

PIONEER ENGINEERING WORKS, Minneapolis 13, Minn., is offering a single-pass portable crushing plant. Crushing is by a jaw type unit fed from a vibrating screen. Screen and crusher product are combined on the conveyor. The plant is designed for highway maintenance work where funds are limited.

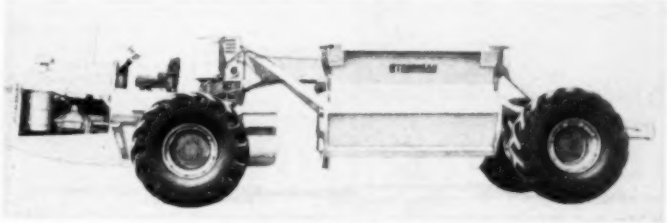
Dempster High-Dumping "Diggster".

DEMPSTER BROTHERS, INC., Knoxville, Tenn., manufacturers of the "Dempster-Diggster," an automotive hydraulic shovel and loader, have announced a new model specially equipped for high dumping. At extreme height, the lowest point of the digging bucket of this new Type HL, Model 100 is 13½ ft. from the ground.

Koehring Booster Clutch.

KOEHRING COMPANY, Milwaukee, Wis., has developed a mechanical booster clutch for use on the Model 301 Koehring ¾-cu. yd. excavator. The new clutch reduces lever pull more than 50 percent by using two separate load-carrying clutch bands, one of which helps to set the other.

Lever pull is directly proportional to the pull exerted by the clutch, so the operator has a good "feel" of the load. A heat compensator spring changes tension automatically to maintain full clutch efficiency at all times, and to control the amount of power transmitted.



LeTourneau "Tournahopper".

R. G. LETOURNEAU, Inc., Peoria, Ill., is offering a bottom-dump machine consisting of the "E-16 Tournahopper" powered by a "C Roadster Tournapull." Electrically controlled doors of the Tournahopper swings sideways like a clamshell to dump the load. Capacity of the new "E-16 Tournahopper" is 15 cu. yds.

1,100 Tons a Day
with Deister Screens at Kerford Quarries

Kerford Quarries began operation in 1886 at Atchison, Kansas, opened up a second operation at Amazonia, Missouri, in 1948. In both of these high-producing quarries, Kerford has *standardized* on Deister Machine Company Vibrating Screens . . . employs Deister exclusively for accurate sizing, trouble-free performance, top production.

Raw crushings are fed to this twin set of 3-deck 5' x 12' Deister Vibrating Screens. Plus 1½ inch material from top decks, plus 5/16-inch from middle decks are gravity-fed to another crusher.

This over-all view of the Amazonia plant shows how Deister Screens are employed for high-speed sizing . . . 1,100 tons a day . . . as stone moves from crusher to railroad cars.

Plus No. 8 mesh, received from the bottom decks of the twin screens, is fed to a third triple-deck Deister, this one a 4' x 12'. Top deck is covered with a 1-inch cloth, middle deck with ½-inch, bottom deck with 5/16-in. Minus No. 8-mesh is dropped into bin for agstone.

And for the final preparation of fine agricultural limestone, Kerford has installed one of Deister's new Ag-Lime Screens . . . the screen specifically designed for high-speed sizing of extreme fines *without blinding*.

At the home plant at Atchison, a triple-deck Deister vibrating screen accurately sizes 150 tons an hour . . . in facts, performed so well that it led to the purchase of three more triple-deck Deisters and the Ag-Lime Screen for the Amazonia plant.

DEISTER SCREENS

DEISTER MACHINE COMPANY
FORT WAYNE 4, INDIANA

Bay City Twenty-Five Ton Crane.

BAY CITY SHOVELS, INC., Bay City, Mich., announce the development of a 25-ton crane. With two types of carriers, the 25-ton crane is available as Model 190-T61 "CraneMobile" and Model 190 CW "CraneWagon."

The Model 190-T61 CraneMobile is mounted on a specially designed, three-axle crane carrier powered by a separate gasoline engine.

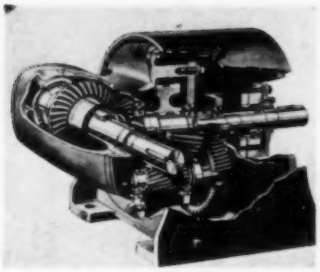
The 190 CW CraneWagon is a self-propelled one-engine crane, mounted on a 6-wheel carrier equipped.

EAGLE IRON WORKS, Des Moines, Ia., is making a line of frost balls which are called wrecker balls, concrete breakers, or skull crackers. They are made of tough, close-grained special semi-steel which withstands abuse and improves with age.

The balls have a well in the top which contains a securely fastened ring for attaching the cable. This protects the cable and the fastening. Balls are available in weights from 2,000 to 4,000 lbs. They are used for breaking shot rock, frozen material, shale, scrap, concrete, and for wrecking buildings.

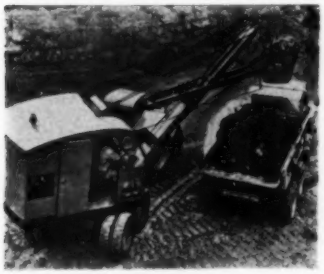
RICHARDSON SCALE COMPANY, Clifton, N. J., has announced a new dust-tight "Swivel Spout" designed to eliminate routing of batches by dusty swivels or conveyor plows. Increased scale flexibility is obtainable by using the spout to chute pre-weighed discharges to different bins or stations, to deliver from a bin to several different scales, or to deliver pre-weighed discharges to two different delivery trucks.

Remote automatic positioning of the spout can be synchronized with other functions by means of a timer. The Swivel Spout is available with either manual or automatic controls.



Falk Speed Reducer.

FALK CORPORATION, Milwaukee 8, Wis., has recently issued a series of new engineering bulletins describing and illustrating its line of speed reducers. These include parallel shaft, right angle (illustrated), concentric shaft, and horizontal or vertical applications. A full line of ratios is available from a minimum of 1.5 to 1 to a maximum of 970 to 1, and horsepower ranges from 1 to 2,000. Improvements in gearing, bearings, and design are featured in the new models.



"Bantam" Truck-Mounted Shovel.

SCHIELD BANTAM COMPANY, Waverly, Ia., is producing the "Bantam" truck-mounted shovel which quickly converts to dragline, trench hoe, crane, clamshell, piledriver, or magnet crane. It is mounted on any 1½-ton (or larger) tandem axle truck. This permits travel on the highway at truck speeds, and saves time in going to jobs. As a crane it has a lifting capacity of 10,000 lbs., and as a shovel it can handle 60 to 90 cu. yds. per hour.

"Grab-It" Work Gloves.

EDMONT MANUFACTURING COMPANY, Coshocton, O., are making the "Grab-It" line of work gloves which are coated with a rough-textured natural rubber on the palm and thumb. This gives a firm grip on smooth or slippery materials, and high resistance to abrasive and cutting action of rough or sharp materials.

Above is the pit and plant of Albuquerque Gravel Products Co. with a 4 cu. yd. Sauerman Power Drag Scraper digging and hauling the 250 t.p.h. needed to keep this modern plant humming.

Move more yardage *Easily* . . . . at lower cost

with a *Sauerman Machine*

It reaches far . . digs powerfully . . hauls rapidly

There's one sure way to cut costs on long range material handling — use a machine that does the whole job without help — a machine that digs, hauls and dumps.

Sauerman excavators are of two main types — power drag scrapers and slackline cableways. Either of these two machines will span a large area and move material at a rapid rate from point to point anywhere within that area, under finger-tip control of one operator.

Of the two machines, the Sauerman power drag scraper has the wider application as a general purpose excavator and stockpiler. The slackline cableway finds its greatest usefulness when the job calls for digging deep, particularly under water, and lifting to a high delivery point.

Both machines are alike in their simplicity, ease of operation, moderate power requirements, low maintenance expense and their ability to work on any kind of ground.

Every Sauerman machine is carefully engineered and constructed to give long, trouble-free service and to stand up under tough digging and heavy loads. Many Sauerman machines in operation today have been running for more than a quarter of a century and still are considered just about as good as new by their owners.

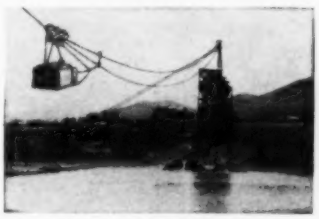
Write today for our catalog. If you have a material handling problem that is bothering you, tell us about it and our engineers will give you their ideas as to the equipment and methods best suited to your requirements.

HILLSIDE EXCAVATION

The picture shows how a Sauerman scraper digs into a hill of hard-packed glacial gravel and moves the gravel to a crushing and screening plant.

STOCKPILING SIMPLIFIED

Small Sauerman scraper handles seasonal storage of 30,000 tons of surplus output annually at crushing plant, piling the surplus material in a single long pile and later reclaiming to a car-loading hopper.



DIGGING UNDER WATER

Here is a Sauerman slackline cableway moving gravel out of a deep pit 400' wide by 900' long which it dug during the last two seasons while producing about 300,000 cu. yd. a season.

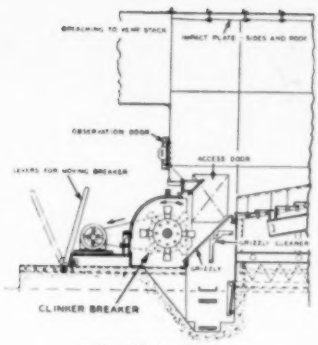
Rope Haulage Equipment Specialists Since 1909

SAUERMAN BROS., Inc.

534 S. Clinton Street **Chicago 7, Illinois**

Athey High-Speed Trailer.

ATHEY PRODUCTS CORPORATION, 5631 W. 65th Street, Chicago 38, Ill., has introduced a high-speed trailer, the "PD-20." It is a semi-bathtub type with tapered sides and one low side for easier loading and dumping. Right or left hand discharge are available. The body is hydraulically dumped. This is designed for use with the Caterpillar DW 20 diesel tractor.

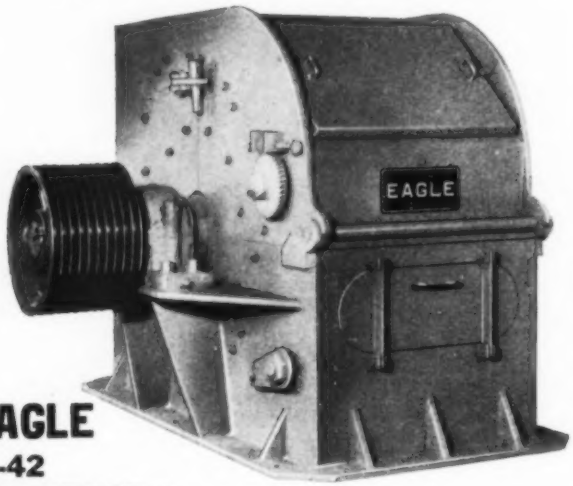


Fuller Clinker Breaker.

FULLER COMPANY, Catasauqua, Pa., has designed a clinker breaker to act as an adjunct to the Fuller inclined grate cooler, to break up oversized pieces of clinker before discharging them from the cooler.

Clinker too large to drop through the grizzly slides down the bars into the path of a set of constantly whirling swing hammers, the impact of which shatters the oversize pieces and projects most of the fragments backward into the interior of the cooler, where further cooling can take place. Speed of rotation permits the oversize pieces to fall into the path of the hammers. Hammer wear is said to be kept at the minimum because the breaking is accomplished by impact and not by attrition.

DOES DOUBLE DUTY



The **EAGLE 36-42 HAMMERMILL**

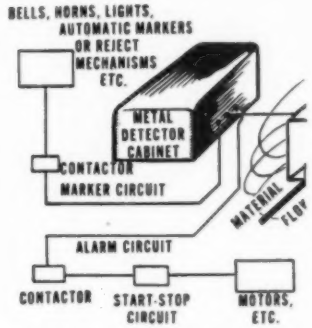
Why buy both primary and secondary crushers when this carefully engineered, sturdily built Eagle will answer for both? Its fast flying, super-hard hammers chew right into all comers—anything that will enter the feeder opening. Turns out any size aggregate, according to the setting, from dust to 3" stone. Unsurpassed for ag-lime production.

Look at EAGLE before you buy!

Send for complete specifications.

EAGLE CRUSHER CO., *Inc.* GALION OHIO·U·S·A

JAW CRUSHERS · IMPACT BREAKERS
PULVERIZERS · CONVEYORS · LOADERS



Eriez Electronic Metal Detector.

ERIEZ MFG. CO., 29 E. 12th St., Erie, Pa., has designed an electronic metal detector that will detect both ferrous and nonferrous tramp metal. It is particularly adaptable for installation on conveyor belts ahead of screening, pulverizing and crushing equipment. The unit operates on belt speeds ranging up to 900 ft. per minute where magnetic separation is not applicable.

The product is conveyed to the search coil where it enters an electro-magnetic field. If metal is present, the detector automatically stops the belt and marks the spot where it can be found. Root pickers can quickly locate and remove metal pieces, and by merely pushing the start button on the control cabinet, start the conveying system.

More Information, Please

CHECK AND MAIL THE CARD BELOW FOR ADDITIONAL INFORMATION ON NEW MACHINERY AND SUPPLIES

1. Testing Equipment. Catalog 15. 62-page catalog listing equipment for cement and concrete testing, soil testing, and testing sieves and shakers, as well as for related fields. Items are illustrated and well described. Humboldt Mfg. Co.

2. The Super-Trough Conveyor. Model S.T. A flier describing a portable conveyor suitable for handling abrasive materials or coal. Specifications included. Conveyor Engineering and Supplies Corp.

3. Thermoid Conveyor and Elevator Belting. Form No. 3679. A 16-page bulletin describing and illustrating types of Thermoid belting available for conveying and elevating. Information on construction, application, and tables of uses, power losses, and drive factors, and many other useful data make this an informative and interesting bulletin. Thermoid Company.

4. B & W Pulverizer, Type E. Bulletin G 57. A bulletin that graphically illustrates the construction of the B&W pulverizer by means of 2-color printing on clear acetate which gives the effect of taking a machine apart step by step. Exceptionally fine art work and printing. The bulletin gives specifications and all needed information on pulverizer applications. Babcock & Wilcox Company.

5. Omega Midget Belt Gravimetric Feeder, Model 80-8. Bulletin 35-G5. Describes the small belt feeder for dry materials of many kinds as bentonite, fuller's earth, lime, coal, rock dust, and similar items. The machine has a positive feed and a totalizer for convenient check of material fed. Omega Machine Company.

6. Denver Disc Filter. Bulletin No. F9-B2. A bulletin that supplies specifications and describes rotating disc filters for removing finely divided material from solutions. Other types of discs are mentioned and typical uses are listed. Denver Equipment Co.

7. Rodgers Hydraulic Jacking Equipment. Catalog No. 317. A 12-page illustrated catalog giving specifications of hydraulic jacks, pumps, and accessories. Rodgers Hydraulic, Inc.

8. 40-C Core Drilling Machine. Bulletin No. 185. An 8-page bulletin which thoroughly describes and illustrates these core drilling machines. Specifications are summarized in a convenient table. Sprague and Henwood, Inc.

9. B. F. Goodrich Conveyor and Elevator Belts. 26-page catalog section featuring illustrations which show all major parts used in the construction of conveyor and elevator belts. Uses, sizes, and other significant features of each kind of belting are described. B. F. Goodrich Co.

10. Hard Surfacing Manganese Steel. A 4-page bulletin outlining applications, precautions, and suggestions on procedure in using Ranite hard surfacing welding materials. Rankin Manufacturing Co.

11. Worthington Allspeed Drive. Bulletin AS-1600-B3. Contains diagrams and specifications of a variable speed series of drives. Worthing Pump and Machinery Corp.

12. Electrifugal Pump. Bulletin 52B6140B. This bulletin illustrates a line of pumps, close-coupled to an electric motor for which the trademark "Electrifugal" has been created. These pumps range from 10- to 500-g.p.m. and are applicable to many uses. Allis-Chalmers Mfg. Co.

13. Tisco Manganese Steel Parts for Crushing and Pulverizing Equipment. Bulletin No. 350. Picture items made of manganese steel for use in crushers and pulverizers. "Timang" welding rod for manganese steel is also featured. Taylor-Wharton Iron and Steel Co.

14. American Revolver Cranes. Catalog No. 400-R-2. A 24-page booklet of photos showing applications of the company's revolving cranes on various dam projects. Capacities of the different models are given. American Hoist and Derrick Co.

15. Link-Belt "CA" Concentric Action Vibrating Screens. Book No. 2354. Photos of typical applications, tables of dimensions, and information on uses of vibrating screens having a concentric action are given. Well illustrated and informative. Link-Belt Co.

16. Fairfield Bulk Handling Equipment for the Process Industries. Bulletin 850. Pictures various kinds of elevators, conveyors, hoists, gates, feeders, and other items used in handling bulk material during processing. Fairfield Engineering Co.

17. Industrial V-Belts. Form No. D-162. A page of photos and five pages of detailed information. Specifications are given for the company's industrial V-belts, and comparable catalog numbers of other manufacturers of belts are given. Valuable for determining sizes and comparing different makes of belts by number. Durkee-Atwood Co.

18. G. E. Synchronous Motor-Generator Sets. GEA-5506. An 8-page illustrated booklet describing motor-generator sets designed to provide d.-c. power for applications where this type is most satisfactory. Construction features are clearly shown. General Electric.

19. Marion 93-M Ward-Leonard Electric Shovel. Bulletin No. 401. Gives information on the design and operating features of the newest shovel in the Marion line. Electric motors power the machine. Marion Power Shovel Co.

Use This Card—Mail Today

January, 1951

PIT AND QUARRY:

Please send more information on items circled.

1.	2.	3.	4.	5.
6.	7.	8.	9.	10.
11.	12.	13.	14.	15.
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NAME _____

TITLE _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____

More Information, Please

20. Permalite Lightweight Aggregate. PA 17. An 8-page two-color brochure illustrating applications of Permalite. Great Lakes Carbon Corp.

21. Diesel Engine Lubrication. Form No. 50-113. A 70-page book useful as a manual of diesel engines. Types of engines, operating principles, fuels, and lubrication are all discussed. Should prove invaluable in getting the most out of diesel engines. Cities Service.

22. Model 600 Diesel Engine Driven Compressor. Bulletin 5025. An illustrated flier giving specifications of a 600 c.f.m. portable diesel air compressor. Schramm, Inc.

23. Torch Catalog. Form ADC-702. A 36-page catalog. Presents detailed information on welding and cutting torches, outfits, tips, and accessories. Charts show correlations of parts. Air Reduction.

24. Praschak Concrete Machinery. Catalog No. 50-2. A 12-page booklet of pictures, specifications, and prices of the line of Praschak concrete masonry machinery. Praschak Machine Co.

25. Crane Bulletin. A 20-page booklet of illustrations showing typical applications of Thew cranes to varied uses in many fields. Designed to suggest ideas on uses. Thew Shovel Co.

26. Cleveland Worm Gear Speed Reducers. Bulletin 130. Thirty-six pages of information, charts and tables on speed reducers and their applications. Contains much information for planning speed reduction. The Cleveland Worm and Gear Co.

27. Bins with the Strength of Pillars. Flier illustrating uses of concrete stave silos for storing products such as cement, lime, sand, gravel, cinders, coal, ground rock phosphate, etc. Gives tables of capacities for various diameters and heights of silos. Neff and Fry.

28. Guillotine Cutters. Bulletin G-20. Four-page folder illustrating types of cutters for wire rope, steel rods, chains, and power cable. Models for hand, electric, or air operation are described. Units are easily portable and will cut mild steel up to 1 in. in thickness. Manco Manufacturing Co.

29. 5-A Normal Duty Roller Type Hold-Back. 444-A. Contains specifications of a hold-back for use on elevators and conveyors to prevent back movement in case of power failure. The unit mounts on the end of the headshaft and needs but one support bracket. A table for estimating the size needed is included. Stephens-Adamson Co.

30. Trouble-Free Bin Indicator. Bulletin B 1-2. Illustrates and describes high- and low-level indicators for use on bins storing cement, aggregate, crushed stone, coal, and other bulk products. Types of mountings are given, as well as suggested uses. Other products of the company such as jets, bin gates, hoppers, turnheads, and aerators, are pictured. Butler Bin Company.

31. Lincoln "Shield-Arc SAE" Welders. Bulletin 1304. Specifications and information on the new 300- and 400-amp. welders are given. Models for stationary or portable mounting are available. The Lincoln Electric Co.

32. Universal Pedestal Rocker Arm Welder. Model 5 PR. Leaflet illustrating and listing features of a pedestal-type welder for shop use. Models with water- or air-cooled contact points are shown. Universal Welder Corp.

33. Facts and Figures. 10th edition. A vest-pocket booklet of 62 pages containing information on crushing, screening, washing, materials-handling, and aggregates. Topics covered include the following: capacities of crushers, screens and conveyors; horsepower requirements; drive tables; crusher product size percentages; weights; measures and conversion factors. Pioneer Engineering Works, Inc.

34. Quality Equipment For the Process Industries. A 24-page booklet illustrating and describing specialized railroad cars for bulk or liquid handling, storage and chemical tanks, dryers, coolers, dewaterers, evaporators, thickeners, clarifiers, filters, and mixers. General American Transportation Corp.

35. Joy Champion Continuous Blast-Hole Drill. Bulletin D-37. Four pages listing the advantages of the Joy Champion drill and describing the continuous rotary cutting action of the tri-cone roller bit, as well as the other features of the machine. Joy Mfg. Co.

36. Naylor Light-Weight Pipe. Bulletin 507. A bulletin showing applications of Naylor spiralweld lockseam pipe in typical applications and giving data on fittings, flanges, connections, and pipe specifications from 4- to 30-in. in size. Naylor Pipe Co.

37. Multiwall Packaging Guide. A 20-page booklet describing and illustrating ways to use all types of multiwall paper bags more efficiently and economically. Storage of empty bags, filling, closing, and handling of filled bags, palletizing, and other topics are covered. Bemis Bro. Bag Co.

38. An Engineering Achievement. Eighteen pages in color showing details of the new model "W" Towmotor Electric pallet truck. All of the major parts of the machine are illustrated by photos to give a clear understanding of the construction features of the new model. Towmotor Corp.

39. Chain Catalog. No. A418. A catalog that describes a line of chains and sprockets for both new and replacement service on elevating and conveying equipment, and for drives. Twenty-two types of malleable, steel, and alloy chains as well as many special types are shown and described. Information is given to simplify selection of the right types of chain. Jeffrey Mfg. Co.

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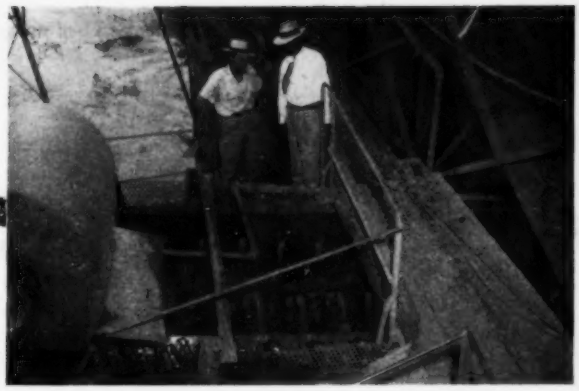

For GIFFORD-HILL & CO., Inc.
DALLAS, TEXAS

Gifford-Hill & Co., Inc., for 25 years, one of the largest sand and gravel producers in the southwest, now operating 15 plants, were having clay trouble at their Fred plant in Trinity River bottoms near Dallas. A strata of tough plastic clay they encountered contaminated their sand and gravel so it could not pass Highway Department specifications. An Eagle 7'x24' Double Log Washer was installed—now material exceeds strictest specifications. The corrugated paddles cut loose even the gummiest clay—water currents rising from bottom of tub wash the loosened clay up and out!

What's Your Problem?

Clay in your sand and gravel? Silt or debris causing you trouble? Wasting fine material that could be sold if properly classified? Excessive water washing away your profits? There's an Eagle unit to solve your problem. Eagle Water Scalping Tanks to control wash water. Eagle has had over 25 years experience in design and construction of washing, dehydrating and classifying equipment—thousands of installations, in almost every state.

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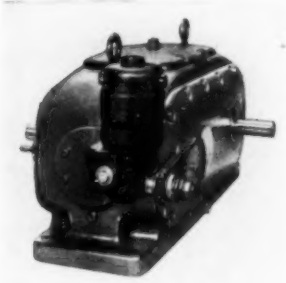
Screw Washers | Log Washers | "Swintek" Dredge Ladders | Clay Crushers | Clay and Cinder Grinders | Shale Planers | Coal Crackers

Cook Bros. Transfer Trailer.

COOK BROS. EQUIPMENT COMPANY 1815 N. Broadway, Los Angeles, Calif., recently introduced their latest transfer trailer, a lightweight, hydraulically-powered model. Transfer is made while both the truck and trailer are in standing position.



Link-Belt Automatic Speed Control.

LINK-BELT COMPANY, 307 N. Michigan Avenue, Chicago 1, Ill., has a new line of automatic speed controls for the positive infinitely variable speed drive.

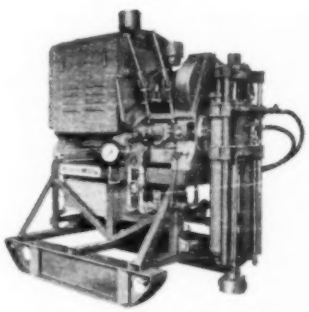
These new controls are job-engineered for automatically controlling the output speed range of the p.i.v. and are available in four basic types—electronic, hydraulic, pneumatic, and mechanical.

The automatic control senses variations quickly and immediately adjusts the p.i.v. drive by the precise amount needed to compensate for each variation, before quality of the product is affected.

SPRAGUE AND HENWOOD, INC., Scranton, Pa., claim improvements in the design and construction of their "10-C" core drill.

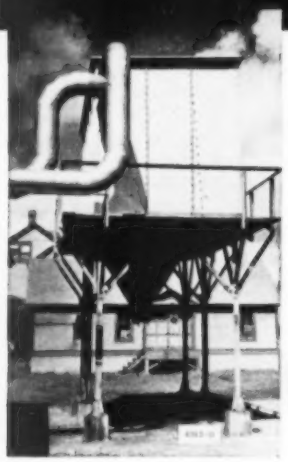
Available with gasoline, diesel, air, or electric power plant, the drill can be equipped with either a screwfeed or double hydraulic swivelhead. These heads are designed to allow drilling at any angle through a 360-degree arc.

The screwfeed swivelhead has five sets of gears for automatically controlling downward feed; these are changed by a shifting handle. The hydraulic head provide infinitely variable rates of feed. Capacities range from 500 to 1,000 ft., core and hole diameter from ⅞ to 1½ in., hoisting speed from 51 to 304 f.p.m., and bit r.p.m. from 240 to 1400.



Sprague and Henwood Core Drill.

SLY PIONEERS and LEADERS IN DUST CONTROL



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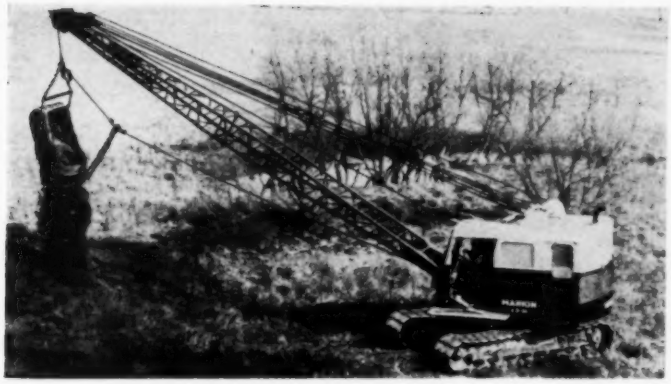


Marion 43-M Shovel.

MARION POWER SHOVEL CO., Marion, O., has announced production of a new 1-cu. yd. machine, the Marion Type 43-M.

Front-end changeovers in the field can be made quickly and easily. A single boom can serve both shovel and backhoe work, but a gooseneck boom is available for backhoe service. A single boom with butt-jointed sections is used for dragline, clamshell, crane or pile-driver service.

to insure more even seating and cooler running.

Bearings are copper-lead alloy with an electrically-coated surface of lead and tin replacing the bronze-backed cadmium-nickel bearings. They are designed for removal without disturbing the crankshaft. Connecting rod bearings are also of the new material.

DENVER EQUIPMENT CO., 1400 Seventeenth St., Denver 17, Colo., offers its mechanical gold pan, said to have a capacity of 20 cu. yds. per day, as compared with 1 cu. yd. by hand panning methods.

Differences in specific gravity between gold, gold-bearing black sand particles, and quartz particles of placer gravel make conditions favorable for separation in the mechanical pan. The device duplicates the hand panning motion by means of a steel yoke and saddle connected to an enclosed rotating ball-bearing eccentric. Power is supplied by a 4-cycle gasoline engine, which also drives a pump, furnishing water for washing gravel and sand.

Chain Belt "Baldwin-Rex" BA Assembly.

CHAIN BELT CO., 1604 W. Bruce St., Milwaukee, Wis., has announced a new development in roller chain construction known as the Baldwin-Rex "BA" assembly. It is designed to simplify disassembly and assembly of roller chain in the field.

ROCK BIT SALES AND SERVICE COMPANY, 2514 E. Cumberland St., Philadelphia 25, Pa., has added the conventional flat-top type to its line of tungsten-carbide bits.

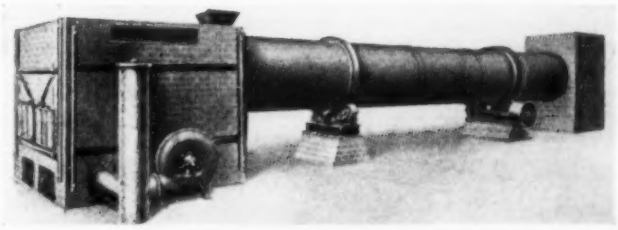
A gauge for use in reconditioning tungsten-carbide bits is also available from Rock Bit Sales and Service. The gauge shows when to grind, as well as the proper angle to grind the bits.

Rogers Portable Crushing Plant.

ROGERS IRON WORKS CO. Joplin, Mo., has announced a three-product portable crusher. This machine will deliver three sizes of aggregate simultaneously such as aglime, road rock, and concrete aggregate. Crushing is by a jaw crusher primary unit and a hammermill secondary one. Any combination of output from the three screens can be arranged. Average capacity is 150 t.p.h. on crushed stone.

FEDERAL MOTOR TRUCK COMPANY, Detroit 9, Mich., has incorporated two major improvements in its Series 60 engines. To lengthen exhaust valve life, rotators have been added. These turn the valves slowly during operation

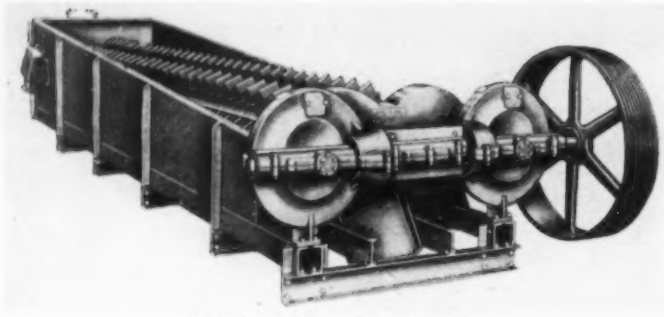
DRYERS & KILNS . . . . . *for all Purposes*



W. P. HEINEKEN

ENGINEER & MANUFACTURER

50 BROAD STREET **NEW YORK, N. Y.**



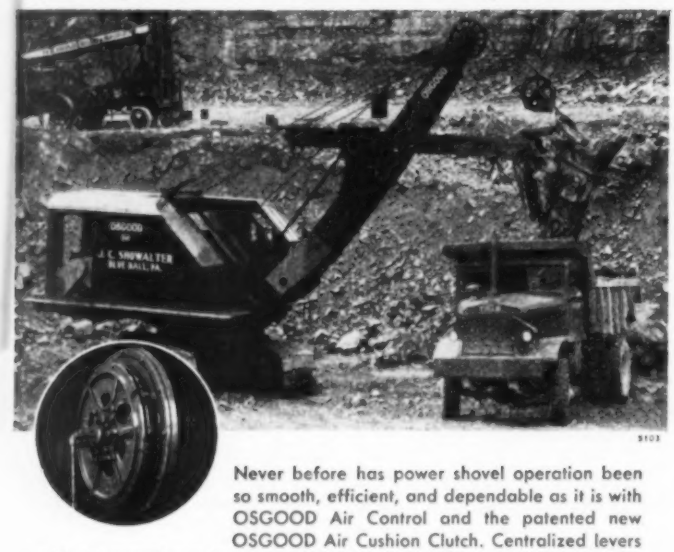
McLanahan and Stone Steel Log Washer.

McLANAHAN AND STONE CORPORATION, Hollidaysburg, Pa., are offering modernized steel log washers which are said to remove up to 90 percent of the toughest kinds of clay without damage to the material being washed. The device is useful for cleaning sand, gravel, rock, and ores.

Log capacities range from 25 to 200 t.p.h. and log speeds from 12 to 50 r.p.m. Size of feeds can vary from fines to 4 in. square. An adjustable overflow eliminates the foreign particles.

OSGOOD

Air Control with Air Cushion Clutch opens great new era in shovel performance



Never before has power shovel operation been so smooth, efficient, and dependable as it is with OSGOOD Air Control and the patented new OSGOOD Air Cushion Clutch. Centralized levers with air metering valves permit *infinitely variable pressure* in activating all motions. And the amazingly simple OSGOOD Air Cushion Clutch completely eliminates jerking and grabbing . . . provides instant, accurate control of loads at all times . . . automatically compensates for gradual wear on clutch linings. Results: More production, less wear on men and machines, greater profits. Write for Bulletin.

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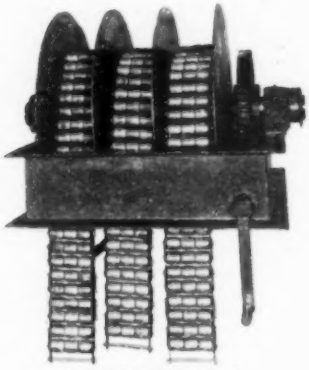
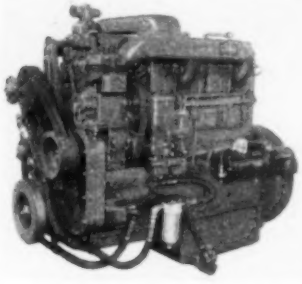
POWER SHOVELS, CRANES
DRAGLINES, CLAMSHELLS
PILE DRIVERS & BACK HOES
CRAWLERS & MOBILECRANES
DIESEL, GASOLINE OR
ELECTRIC POWERED
CAPACITIES ⅛ TO 2½ CU. YD.



Merrick Test Chain Reel.

MERRICK SCALE MFG. COMPANY, Passaic, N. J. has designed a roller test chain reel for testing and calibrating "Weightometer" installations.

It is claimed that the reel handles the heaviest chains with ease and eliminates the need for several workers to handle the chains. Other advantages cited include the following: avoidance of muscle strain, finger injuries, and damage to edges of conveyor belts, guard rails, skirtboards and test chains; accelerated testing; tendency to encourage regular testing; safe storage of test chains directly above the conveyor belt for immediate availability.



Cummins Super-Charged Diesel.

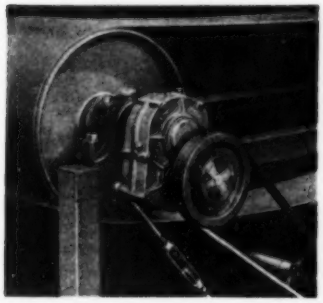
CUMMINS ENGINE COMPANY, INC., Columbus, Ind., has developed a supercharged diesel, the "NHRS-600," for automotive and industrial uses. The new model develops 300 hp. at 2100 r.p.m.

The motor features a reduction in fuel consumption in the high horsepower output operating range; a completely new fuel pump based on proved Cummins principles of fuel metering and injection

● Torque-Arm Speed Reducer

A speed reducer that mounts directly on the driven shaft is announced by the Dodge Manufacturing Company, Mishawaka, Ind. The "Torque-Arm Speed Reducer" is designed for use on conveyors, bucket elevators, agitators, mixers, feeders, processors, and similar machinery. It has a 15 to 1 ratio, driven through any V-belt or flat belt drive. Any output speed from 13 to 133 r.p.m. can be obtained by using stock sheaves. The reducer contains a double train of helical steel gears, heat-treated and shaved. It is locked to the shaft by steel locking collars. A bushing keyed into the sleeve adapts to any size shaft.

A torque arm anchors the reducer and provides easy adjustment of belt tension by a turnbuckle. The speed reducer is

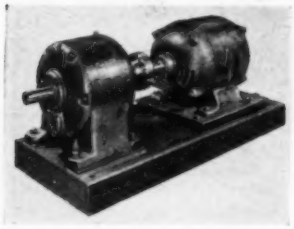


made in six sizes with capacities to 28.5 hp.

Recently added to the above line of speed reducers is a series of single reduction units for speeds of 115 to 330 r.p.m. and power capacities to 27 hp. These units are essentially the same as the others except for the difference in size and reduction.

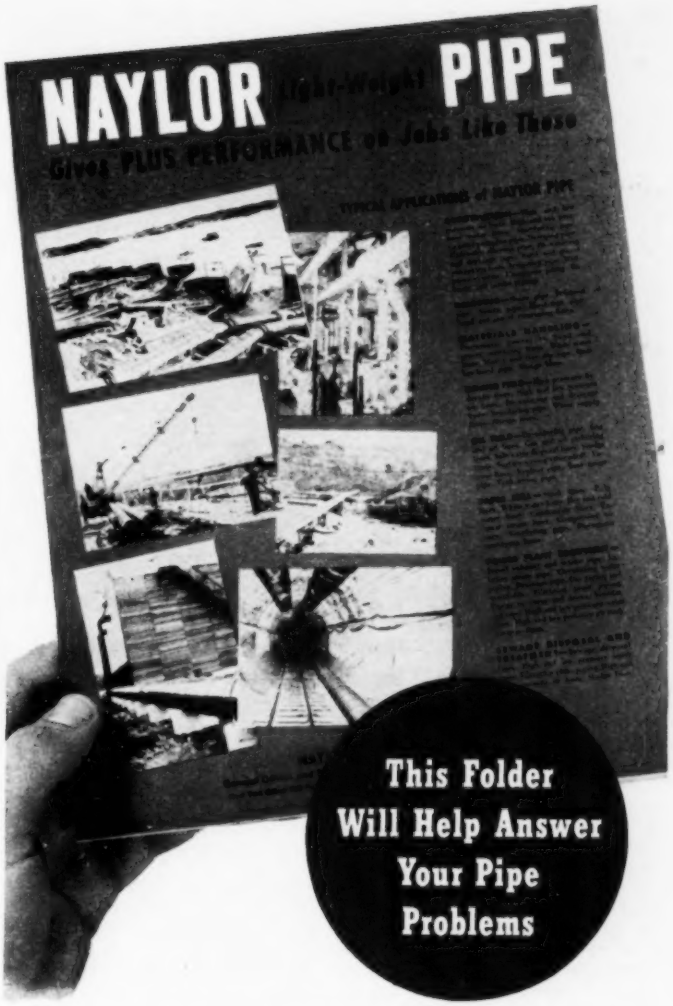
● Packaged Power Unit

A packaged power unit, consisting of an enclosed helical gear drive and motor, flexibly coupled and mounted on one base plate is announced by the Link-



Belt Company, 307 N. Michigan Ave., Chicago 1, Illinois, under the name of "Motogear".

Motogears are built in a number of sizes, with double or triple gear reductions, and a wide range of ratios and horsepowers. Input and output shafts are concentrically in line. The unit is similar to the company's "Gearmotor", but the motor is separately mounted instead of being integrally secured to the drive shaft.


NAYLOR Light-Weight PIPE
Gives PLUS PERFORMANCE on Jobs Like These
TYPICAL APPLICATIONS of NAYLOR PIPE
This Folder Will Help Answer Your Pipe Problems

To show where lightweight pipe can be used to best advantage in your field, Naylor has prepared this handy folder. It gives you helpful specifications on Naylor pipe, fittings, flanges and connections in concise form. Write today for your copy of Bulletin 507 . . . without obligation.

NAYLOR PIPE

Naylor Pipe Company, 1257 E. 92nd St., Chicago 19, Ill.
New York Office, 350 Madison Avenue, New York 17, N.Y.

New "Packaged Unit" designed for aggregates, coal, coke, ores and other bulk materials

Equally applicable for both small or large scale operations, the new Hewitt-Robins Sectional Belt Conveyor is a packaged unit that can be assembled by your own workmen—and in considerably less time than required for conventional type conveyors.

From the variety of truss sections, head sections and A-frame supports you can select a conveyor system suited to your needs—in length, height, belt width and capacity. And, when you change locations, the conveyor can be disassembled, with sections added or dropped to suit conditions at the new site.

Like all Hewitt-Robins machinery, this new Sectional Belt Conveyor is carefully designed, strongly constructed. It is equipped with world-famous Robins Troughing and Return Idlers with one-shot lubrication. Curved decking protects the return strand of the belt.

And remember, only Hewitt-Robins is able to take single, unified responsibility for a successful Belt Conveyor installation—machinery and belting. For complete information on the new Hewitt-Robins Sectional Belt Conveyor, write today for Bulletin No. 132. Address Robins Conveyors Division, 270 Passaic Avenue, Passaic, N. J.

* * *

HEWITT-ROBINS SECTIONAL BELT CONVEYOR HEAD SECTIONS—3 types of drives to take motors from 2 hp to over 40 hp. Terminal pulleys (both head and tail) are solid welded steel with cast iron hubs.

TRUSS SECTIONS—2 designs—24" deep in lengths of 6'6", 15'6", 18'6", and 21'6"; 42" deep for greater spans. Side members all-welded construction; diagonal bracing members have jig-drilled holes for quick field assembly.

BENT SUPPORTS—A-frames are available in complete range from 4' to 50' deep—easily erected.

BELT WIDTHS—18", 24", 30" and 36". Lengths up to belt limitation.

HEWITT-ROBINS

BELT CONVEYORS

HEWITT-ROBINS INCORPORATED

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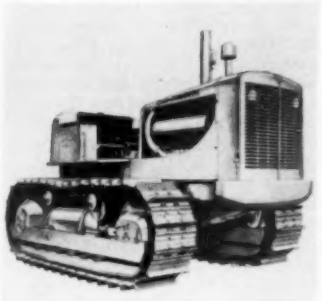
TRANSMISSION BELTING • VIBRATING CONVEYORS, FEEDERS AND SCREENS

● Torque-Powered Tractor

A torque-converter-powered tractor, the "HD-20," has just been introduced by Allis-Chalmers, Milwaukee, Wis.

Powered by a 2-cycle GM 6-110 diesel

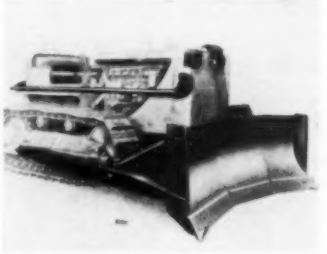


engine, the new tractor has a three-stage hydraulic torque-converter which conveys the power to the driving mechanism and eliminates most of the gear shifting. Unit construction of major assemblies permits removal or replacement of major parts with the least possible effort and lost time.

The steering levers are hydraulically powered. Brakes are self-energizing. The frame is all-steel with extensive welding employed in construction. The entire machine has been built for rugged use and for ease of maintenance, according to the company.

● U-Shaped Bulldozer

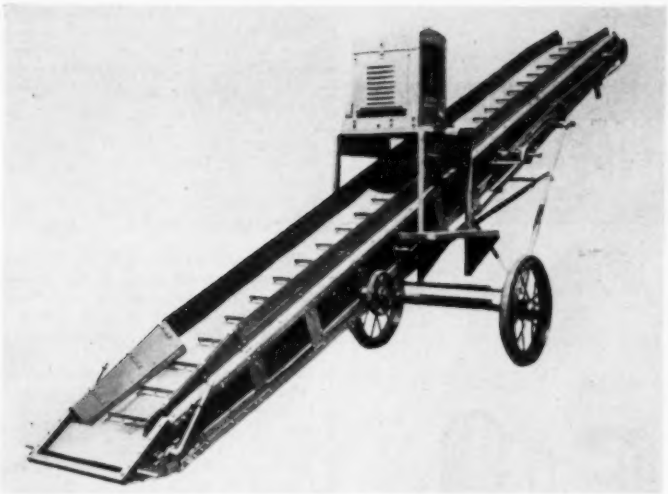
A large capacity, U-shaped bulldozer for universal use in earthmoving applications has been added to the line of Caterpillar Tractor Company, Peoria, Ill. The unit was designed for use with



the D8 track type tractor, and is called the "No. 8U".

The new design permits long-haul pushing of loose material without excessive end spillage. It is excellent for stockpiling, and does a smooth finishing job, according to company sources. The blade is 11 ft. 11 in. wide, 45½ in. high, and has a maximum lift at the center of the blade of 47½ in. The blade pitch adjustment is a maximum of 10 degrees, and the maximum tilting adjustment is 16 in.

The bulldozer is of box type construction, with a 1-in. cutting edge, and heat-treated carbon steel end bits. It is cable-controlled and comes with blade, push arms, trunnions, cable, sheaves, and sheave brackets.



● Trough Conveyor

Specifically designed for handling abrasive materials is the "Super-Trough" conveyor, Model S.T., a product of the Conveyor Engineering & Supplies Corp., P.O. Box 106, Clifton, N. J.

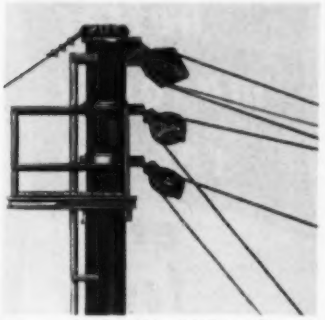
These features are cited by the manufacturer: heavy tractor-type chain; large-diameter head pulley to prevent slipping; 14-in. belt take-up; large-size Hyatt roller bearings; ground bore and roller bearings in the wheels; solid steel axles for smooth operation; extra heavy grooved rim and staggered spokes for added strength; wire tread; extra wide spacing of wheels to prevent upsetting; steel pans covering belt to prevent packing; extra heavy truss frame; hardened shafts and dust-proof Hyatt bearings.

Renewable rubber strips form a hopper at the end, preventing the material from grinding the edge of the belt. The maker has supplied extra heavy pan and protection plate, to guard against belt sagging and pulley clogging.

● Cableways and Masts

Sauerman Bros., Inc., 534 S. Clinton St., Chicago 7, Ill., announces a new series of small slackline cableway excavators (⅓-, ½- and ¾-cu. yd. capacities) furnished with tubular steel masts. These small machines generally used masts built of timber, and the manufacturer furnished only the necessary hardware and plates for trussing the mast.

The new type of mast provides a better, stronger support for the head end of the cableway and also is easier to erect than a timber mast. It is shipped in two parts with bolts for assembling. A platform with railing is provided atop the mast for use in servicing sheave blocks. It is reached by a ladder welded to the mast. Capping the mast is a steel disc swivel plate for attaching the guy cables, and the base is a ball-and-socket casting.



MINNEAPOLIS-MOLINE
MM
MODERN MACHINERY
MODEL 1210-12A
230 hp on LP gas.
215 hp on natural gas.
High Turbulence POWER
FOR LOWER COST PER HP
MM Power Units give you lower operating cost through choice of fuels, simple installation, easy servicing and economical maintenance! Built-in reduction gear permits direct drive. Front power take-off allows opposite rotation or easy ganging of units for extra power without expense or inconvenience of belts and pulleys. Units available for fully automatic operation.
FOR SURPRISING POWER ECONOMY, INVESTIGATE MM LP GAS AND NATURAL GAS ENGINES AND UNITS . . .
Send complete facts on MM power engines from 25 hp to 230 hp.
Approximate hp required.....
Name.....
Address.....
City.....State.....
QUALITY CONTROL IN MM FACTORIES ASSURES DEPENDABLE PERFORMANCE ON THE JOB!
MINNEAPOLIS-MOLINE
MINNEAPOLIS 1, MINNESOTA

trade notes

J. H. Robertson has been appointed comptroller of Arkell and Smiths, it was announced recently by the board of directors of the Canajoharie, N. Y., bag manufacturing company.

Mr. Robertson was associated with Lybrand, Ross Bros. and Montgomery, New York City accounting firm, since 1944, prior to accepting his new position. Before that he was comptroller and treasurer of the Heyer Products Company, Belleville, N. J., and comptroller and treasurer of the Isolantite Company, Belleville, N. J.

New officers of Pioneer Engineering Works, Inc., Minneapolis, Minn., have been announced by the board of directors, following acquisition of the stock of Pioneer by Poor and Company, Chicago.

Re-elected are Lewis W. York, president and general manager, and Melvin Ovestrud, vice-president and works manager. Elected vice-president in charge of sales is K. E. Brunsdale, formerly secretary-treasurer. Treasurer is O. J. Ellertson, formerly assistant secretary and assistant treasurer. Assistant secretary is C. R. Rolf, formerly assistant sales manager; in addition, Mr. Rolf has been appointed sales manager.

Chicago officers of the company announced by the board are as follows: Fred Poor, chairman; Eugene C. Bauer, vice-chairman; P. W. Moore Jr., secretary; and R. W. Sergeant, assistant secretary and comptroller.

Arrangements were recently completed by Pullman-Standard Car Manufacturing Company, a subsidiary of Pullman Incorporated, to enter the tractor allied equipment field.

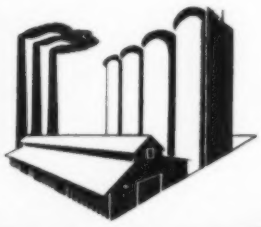
On December 29, 1950, Pullman-Standard acquired the entire tractor allied equipment business of Isaacson Iron Works at a cash price to be finally determined later on in accordance with the recently executed closing agreement. (The term "tractor allied equipment" refers to various accessory products such as bulldozers, scrapers, rippers, hydraulic power units, hauling winches, and other equipment utilized with crawler-type tractors.) Isaacson products have been manufactured at plants in Seattle, Wash., and Rockford, Ill. The phase of this tractor allied parts activity now carried on at Isaacson's Seattle plant will be transferred as soon as possible to the Hammond, Ind., plant of Pullman-Standard. Operation of the Isaacson plant at Rockford, Ill., will be continued by Pullman-Standard.

William F. Williams, director manganese sales was made vice-president in charge of manganese sales for the Taylor-Wharton Iron and Steel Company, High Bridge, N. J. H. E. Cragin Jr., formerly assistant to the president, for engineering and research, was appointed assistant vice-president in charge of manganese sales. John P. Reynolds was appointed assistant sales manager.

Chicago locations of Hewitt-Robins Inc. have been consolidated at 402 West Randolph Street. L. D. Bigelow, vice-president in charge of central division operations, announced.

Offices and warehouses of the Hewitt Rubber, Robins Conveyors and Robins Engineers Divisions will be located at the new address.

better masonry cement at lower cost with



ALL-IN ONE airalon

airalon is an air entraining agent and plasticizer formulated especially for masonry cement.

airalon comes ready to use. It contains, in one easy-to-handle compound, the saponified resin acids and fatty acids necessary to make a high quality masonry cement.

airalon is economical to use. It enables the cement maker to produce his present quality masonry cement at lower cost . . . or to produce a higher quality masonry cement at no increase in cost. Because **airalon** is added at the cement mill as received, in liquid form, it simplifies problems of inventory, handling, and storage. In addition, **airalon** is an excellent grinding aid.

airalon has been exhaustively tested in our own laboratories and in large commercial grinds . . . is accepted by ASTM under Cement Specification C 175-48T.

DEWEY and ALMY CHEMICAL COMPANY

Cambridge 40, Mass. • Chicago 38, Ill. • Montreal 32, Canada • San Leandro, Calif.

A. R. Kelso

A. R. Kelso has been elected vice-president of Mack Trucks, Inc., and also vice-president and a director of Mack Manufacturing Corp., the parent company's wholly-owned manufacturing subsidiary.

In his new position Mr. Kelso will be in charge of manufacturing and production at all Mack plants. He will make his headquarters at Allenton, Pa., site of the 50-year old company's main assembly plant.

J. Lundahl

John Lundahl has been appointed to the newly-created position of sales representative - at - large by the Detroit Diesel Engine Division of General Motors Corporation.

Mr. Lundahl will be on special assignment, working with the regularly assigned sales representatives throughout the country. He will also be available when needed to assist in the engineering of special GM diesel engine installations in the industrial field.

Announcement was made recently by Sterling Electric Motors, Inc., of the acquisition of an 11-acre site in Van Wert, O., for the construction of a branch plant to serve the company's Mid-western and Eastern business. Plans and specifications for the new plant building and equipment are currently being prepared, and it is estimated that the new site will represent an investment close to half a million dollars.

Gramm Trailer Corporation, Delphos, O., announces the election of Dan S. Ellis as executive vice-president. Mr. Ellis was president and a director of the Lima-Hamilton Corporation of Lima, O. He is widely known in transportation, having been chief mechanical officer of the Chesapeake & Ohio, Nickel Plate, and Pere Marquette railroads and, before that, mechanical assistant to the vice-president and engineer of motive power on the mechanical committee of those railroads and the Erie railroad.

Gerald C. Quinn, editor of the *Allis-Chalmers Electrical Review*, has been appointed supervisor of industrial press relations, according to A. R. Tofte, manager of the Allis-Chalmers advertising and industrial press department. He succeeds N. H. Jacobson, who joined the Atomic Energy Commission in the newly created position of technological information officer.

SYNTRON
"Vibra-Flow"
VIBRATORY FEEDERS
With Rheostat Control of Rate of Flow
WILL HANDLE—most all types of bulk materials — lumps to powders — hot or cold — dry or damp. AT — variably controlled rates from pounds to hundreds of tons per hour. TO — mixers, belts, driers, crushers, etc.
write today
FLAT PAN FEEDERS
SPREADER FEEDERS
TUBULAR FEEDERS
WEIGH FEEDERS
DRIER FEEDERS
FURNACE FEEDERS
CONVEYOR FEEDERS
PICKING TABLES
SCREENING FEEDERS
GRIZZLY FEEDERS
ELEVATOR FEEDERS

Stop Bangin' Away Good Manpower
MAKE EVEN STUBBORN MATERIALS FREE FLOWING
With
SYNTRON
"Pulsating Magnet"
ELECTRIC VIBRATORS
3600 vibrations per minute — with controlled intensity — break down arching and plugging — keep materials moving out of those troublesome bins, hoppers and chutes.

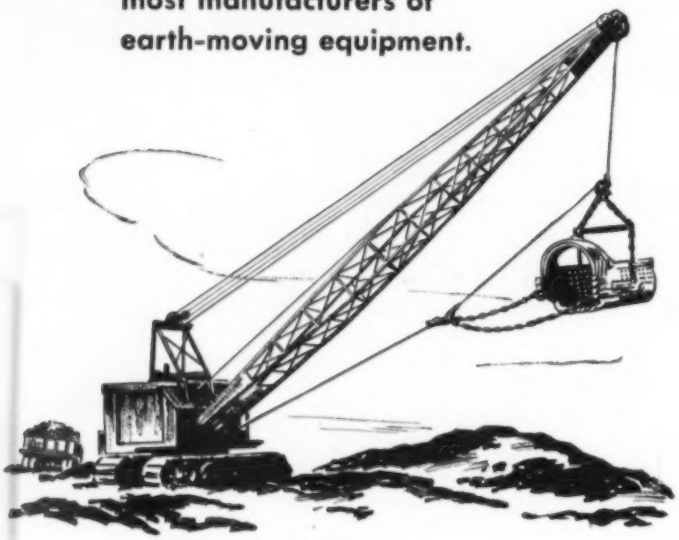
WRITE TO

SYNTRON COMPANY

385 Lexington **Homer City, Pa.**

FIRST WITH MANUFACTURERS . . .

J-M INDUSTRIAL FRICTION MATERIALS are specified as original equipment by most manufacturers of earth-moving equipment.



FIRST WITH OPERATORS . . .

Operators who want to keep maintenance costs low *know* that **JOHNS-MANVILLE FRICTION MATERIALS** are easy to wear in, hard to wear out.

If Johns-Manville materials are right to *start* with . . . they must be right to *stay* with. When you order replacements, remember that Johns-Manville says "stop" and "go" to more tonnage than any other friction materials . . . see your Johns-Manville Friction Materials distributor or write Johns-Manville, Box 290, New York 16, New York.

JM

Johns-Manville

INDUSTRIAL FRICTION MATERIALS

No. 1 With Leading Manufacturers

The Osgood Company and The General Excavator Company, Marion, O., announce the combination of their sales management and policies for the distribution of Osgood and General power shovels, cranes, draglines, clamshells, hoes and "Mobilcranes." This consolidation affects only the sales efforts, with other functions carried on by the individual companies as heretofore.

L. O. McLean, former sales manager of General Excavator Co. has been appointed director of sales development. He will spend the greater portion of his time in developing the expansion of sales in new fields and new applications of the products of The Osgood Company and The General Excavator Company and to special sales problems. James S. Fortiner has been appointed sales manager for the combined office. Kenneth O. Williamson has been appointed assistant sales manager. Mr. Williamson was formerly Division Sales Manager in the Western states, and more recently in the New York-New England division.

George Day, former sales manager of The Osgood Company, has retired after spending 45 years in the power shovel industry, 30 of these with Osgood.

Officials of the Baldwin-Lima-Hamilton Corporation have announced that the assets and business of the Lima-Hamilton Corporation have become a part of The Baldwin Locomotive Works which, under the name of Baldwin-Lima-Hamilton Corporation will hereafter carry on all activities formerly conducted by both companies.

The W. W. Sly Manufacturing Company of Cleveland, O., has appointed the Horrell Company, 8006 Melrose Avenue, Los Angeles 46, Calif., to act as sales engineers for the Sly line of industrial dust control and sandblast equipment.

Raybestos-Manhattan, Inc., has announced the removal of its New Orleans office and warehouse from 1009 Camp Street to 920 Calliope Street.

Koehring Company of Milwaukee recently announced the appointment of Construction Equipment Company as distributor in Alabama and northwestern Florida. The company office is located in Birmingham, Ala. Robert F. McCullough is president and Dan Dodge is the general manager.

In addition to the Koehring line of heavy-duty construction equipment, the firm also will represent two subsidiaries: Parsons Company of Newton, Ia., and the Kwik-Mix Company of Port Washington, Wis.

Allan L. Davis has been appointed manager of service of the Transportation Divisions of General Electric's Apparatus Department in Schenectady, N. Y. The position is newly-created and will be one of evaluating and analyzing service requirements for the transportation industry. Pioneer work in service practices will also be undertaken.

Vern Schield, co-owner of the Schield Bantam Company, Waverly, Ia., recently returned from a business trip through nine European nations. He met Bantam representatives in England, France, Belgium, Switzerland, Portugal, Spain, Germany, Ireland, and Holland and visited an industrial exposition held in Berlin in October. This show featured tools and precision machinery, many of them made outside the Russian-held zone and shipped into Berlin by rail.

H. K. Porter Company, Inc., has announced the sale of its locomotive business, including patterns, drawings, and spare parts business, to Davenport-Besler Corporation (Davenport Locomotive Works), Davenport, Iowa.

T. M. Evans, president of Porter, stated that the sale included an agreement that Davenport-Besler would service all Porter locomotives now in use. George Besler, chairman of Davenport-Besler, explained that Davenport will not only service all Porter locomotives now in operation, but will also build duplicate Porter locomotives including the Porter fireless locomotives. This arrangement was made possible by including all drawings in the purchase.

Chester F. Conner, manager of Industrial Products Sales of The B. F. Goodrich Company and a widely known figure in the rubber industry for 40 years, has been placed on the company's retirement payroll.

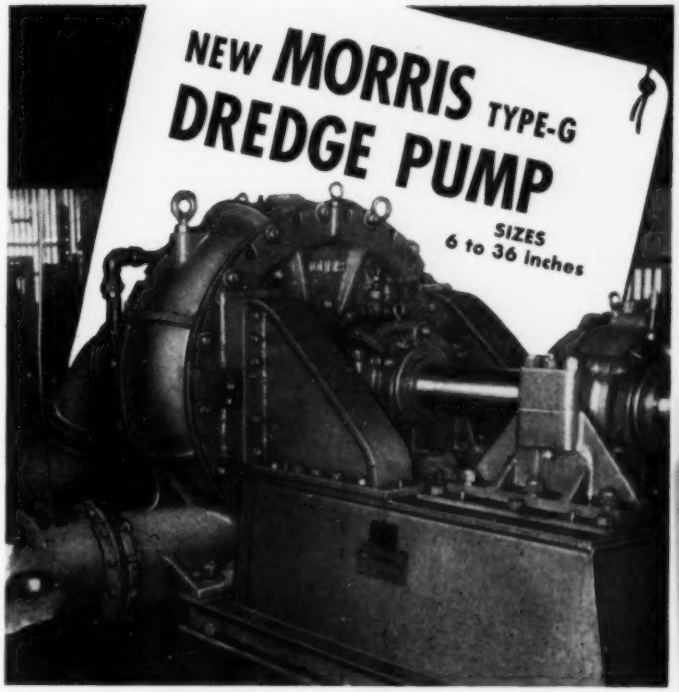
Paul W. Van Orden has been named industrial products merchandise manager, Richard G. Cox manager of original equipment sales, Wilfred A. Smith, manager of molded, extruded, lathe-cut and sponge sales, and George J. Fischer, manager of V belts and packing sales.

John A. Sauerman of Sauerman Brothers, Inc., was recently awarded the Lumen Christi medal by Valparaiso University for outstanding services in the cause of the Lutheran Church. Mr. Sauerman is said to be the first layman to receive the award.

W. A. Roberts, executive vice-president of the Allis-Chalmers Manufacturing Company, has announced the appointment of Floyd J. Mischke as export manager of the company's Tractor Division. Mr. Mischke succeeds the late M. J. Proud.

The George Haiss Mfg. Co., Inc., division of Pettibone Mulliken Corp., New York, Cedar Rapids, and Chicago, has announced the appointment of Ed Jordan, 232 East 86th Street, Brooklyn, N. Y., as sales representative in New York City, Long Island and Weschester County.

Mr. Jordan will handle the completely new and redesigned line of Haiss belt and drag type conveyors and car unloaders, package-handling conveyors, and the new chain and belt positive pull car unloader. He also represents Haiss clamshell buckets and coal loaders in Staten Island.



Your ticket to a

LONG RUN PERFORMANCE

with Minimum Power Consumption

What do we all want most in a dredge or materials handling pump? There is only one answer — *the lowest possible overall cost per yard or ton.* You've got it in the new Morris Type G. Intervals of down-time are few — because Type G is simple, rugged, fool-proof. Power consumption is cut to the bone, over a large range of capacities — through long or short pipe lines — against high heads or low. You'll be amazed at the performance of this new Morris Dredge Pump — but take a look at these design and construction features and you'll know why this "work horse" is being called "the most efficient dredge pump ever built."

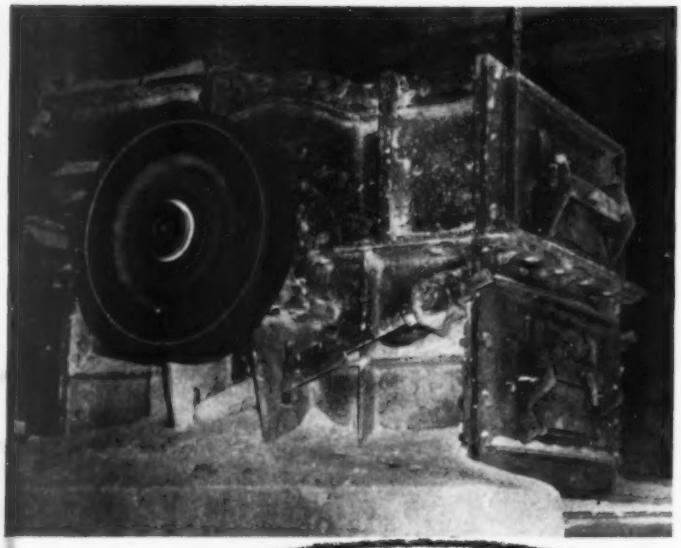
1. Runs maximum length of time under high, sustained output—without replacements. That means LESS DOWN-TIME.
2. Designed with fewest possible wearing parts—and these have longer life. That means LESS DOWN-TIME.
3. No complicated seals or sealing rings—less vulnerable points. That means LESS DOWN-TIME.
4. Unusually easy to dismantle, and reassemble. That means LESS DOWN-TIME.
5. Has Morris exclusive balanced impeller—less thrust—longer bearing life. That means LESS DOWN-TIME.

Just issued — Write today for detailed literature about this New Morris Type G Dredge Pump

MORRIS MACHINE WORKS
Baldwinsville, N. Y.

MORRIS *Centrifugal Pumps*

Branch Offices in Principal Cities



1,150,000 TONS OF STONE CRUSHED WITH A PARTS-REPLACEMENT COST OF ONLY 1/3¢ PER TON

AMERICAN ACS-4 HAMMERMILL at Missouri Quarry gives proof of BUILT-IN QUALITY

At a large Missouri Quarry, this rugged American Hammermill keeps parts-replacement — and stone crushing costs — down to a minimum.

That's because Americans are built to last — with heat treated alloy steel main rotor shaft . . . heavy-duty Timken Bearings enclosed in dust and oil-tight pillow blocks . . . heavily ribbed sectional frame for vibration-free operation and easy accessibility and adjustability . . . all-manganese steel crushing parts for longer wear.

From agstone to roadstone sizing, Americans offer the flexibility and consistent sizing control that make every reduction job more efficient as well as more profitable.

SEND for your copy of "BETTER STONE CRUSHING".

American PULVERIZER COMPANY
Originators and Manufacturers of Ring Crushers and Pulverizers
1059 Macklind Ave.
St. Louis 10, Mo.

W. H. Schneider

W. H. Schneider has been elected vice-president and comptroller of Mack Trucks, Inc., succeeding J. E. Savacool, who is retiring. Mr. Schneider was also elected a member of the board of directors.

Mr. Schneider, who has been assistant comptroller of Mack since 1943, served as treasurer of Willys-Overland Company from 1941 to 1943, and was a vice-president of the Toledo Trust Company from 1932 to 1941. Previously he was associated with Ernst & Ernst, Certified Public Accountants.

R. D. Redner

The promotion of R. D. Redner to sales representative of the Detroit Diesel Engine Division of General Motors was announced recently.

In his new capacity, Mr. Redner will promote the sale of General Motors Series 71 and new 275 hp. "6-110" diesel engines through the division's distributor organization in Minnesota, North and South Dakota, Iowa, Nebraska, western Missouri and Kansas.

Carlton R. Becker was recently appointed as western factory representative for the Morse Chain Company, Division of Borg-Warner Corp. Mr. Becker will supervise the sales of Morse mechanical power transmission products in the 11 states west of and including Montana, Wyoming, Colorado, and New Mexico. Mr. Becker's headquarters are at 1571 Harding Ave., Pasadena 7, Calif.

Donald B. Olen has been appointed to the position of works manager of The Four Wheel Drive Auto Company. As works manager, Mr. Olen will have direct supervision of the engineering and manufacturing phases of FWD operations. The objective is to unite production and process engineering functions into one manufacturing facility.

In the final ratings of the independent board of judges for the Financial World Survey of Annual Reports, Pettibone Mulliken Corporation, Chicago, Ill., was judged as having the best annual report of the rail equipment industry. The bronze "Oscar of Industry" was presented to E. J. Seifert, president of the company, at the Annual Awards Banquet in the Grand Ballroom of the Hotel Statler, N. Y.

J. M. East, formerly with the Independent Pneumatic Tool Co., has joined King & Kringel Machinery Corporation, 2390 South Delaware Street, Denver, Colo., as vice-president and sales manager.

At the annual meeting of the Conveyor Equipment Manufacturers Association, held at the Greenbrier Hotel, White Sulphur Springs, W. Va., W. E. Madden, vice-president of the George Haiss Mfg. Co., Inc., division of Pettibone Mulliken Corp., was elected chairman of the Portable Conveyor Group, to serve for a period of one year.

B. W. Reeve, vice-president, Lake Shore Engineering Co., was elected vice-chairman.

Changes among executive personnel of Hewitt-Robins Incorporated were announced by Thomas Robins Jr., president.

Vice-president B. T. Moffatt, New York, was named general manager of the company's Hewitt Rubber and Robins Conveyors Divisions in addition to supervision of sales for these two divisions. W. H. Watkins, Buffalo, formerly controller, was appointed treasurer. Ellis B. Gardner, New York, formerly assistant controller, was named controller.

Broadening of the executive structure of Caterpillar Tractor Company has been announced by President Louis B. Neumiller. The change includes creation of

H. S. Eberhard

W. Blackie

an additional executive vice-presidency, together with the promotion of four administrative and departmental heads.

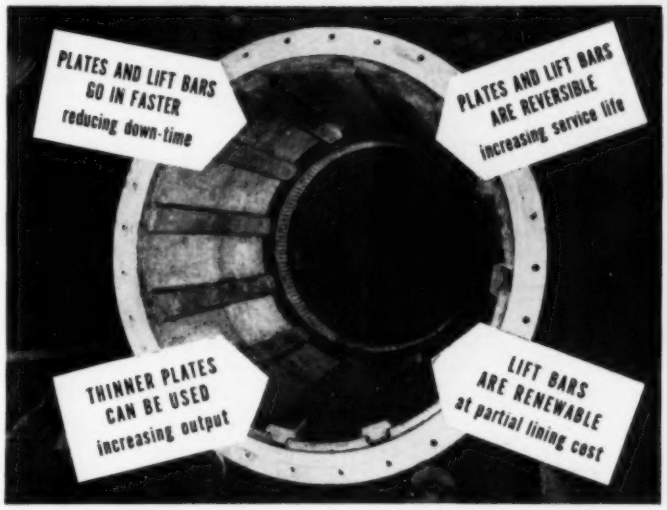
Personnel figuring in the announcement and their new posts include: Harmon S. Eberhard, executive vice-president; William Blackie, who will coordinate with Peoria the administration

E. W. Jackson

R. M. Monk

of the Joliet and San Leandro plants and Caterpillar Tractor Co. Ltd., new British subsidiary; E. W. Jackson, vice-president; Ralph M. Monk, vice-president; W. H. Franklin, who will assume administrative direction of the accounting and the traffic and order departments; and A. N. Whitlock, who will assume direct supervision of accounting.

LORAIN ROLLED PLATE LININGS
slash grinding costs BECAUSE:


PLATES AND LIFT BARS GO IN FASTER
reducing down-time
PLATES AND LIFT BARS ARE REVERSIBLE
increasing service life
THINNER PLATES CAN BE USED
increasing output
LIFT BARS ARE RENEWABLE
at partial lining cost

● U·S·S Lorain Rolled Plate Linings are made to accurate size and in easily-handled sections . . . save hours of installation labor and reduce mill downtime. And because of the rugged strength of the rolled steel from which they're made, plates of reduced thicknesses can be used, thereby increasing usable diameter of the mill, boosting output.

You'll save on upkeep, too, when you install Lorain Linings. That's because plates and lift bars are both interchangeable and reversible. Often linings can be restored to full grinding efficiency, at only partial lining cost, just by renewing the lift bars as they wear down. To balance wear at feed or discharge end of the mill, the symmetrical plates can be reversed to the opposite end. In this way you get *all* the life out of the plate.

U·S·S Lorain Rolled Plate Linings are available—in diameters, lengths and thicknesses for every type of mill—through leading mill manufacturers whose names will be furnished upon request.

U·S·S GRINDING BALLS

Make better, more economical grinding doubly sure with U·S·S Grinding Balls. Available in sizes from ¾" to 5" in diameter. For complete information about these durable grinding balls, send for our new booklet. No obligation. Just return the coupon.

United States Steel Company
4217 Carnegie Building
Pittsburgh 30, Pa.
Without obligation on my part, please send me your free booklet on U·S·S Grinding Balls.

Name .....
Company .....
Address .....
City ..... State .....

COLUMBIA STEEL COMPANY, SAN FRANCISCO · TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM
UNITED STATES STEEL COMPANY, PITTSBURGH · UNITED STATES STEEL EXPORT COMPANY, NEW YORK

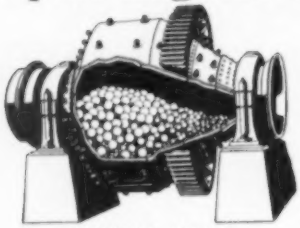
LORAIN ROLLED PLATE LININGS
AND U·S·S GRINDING BALLS

1-130

UNITED STATES STEEL

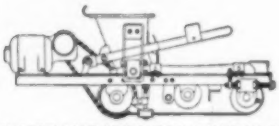
MATERIAL PROCESSING EQUIPMENT

...plus Engineering "KNOW-HOW"

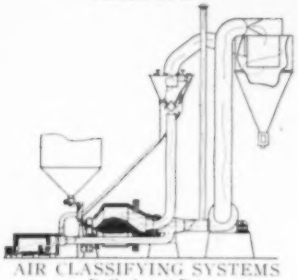


CONICAL MILLS
Bulletin 17-B-8

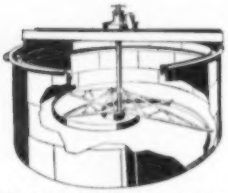
ROTARY DRYERS, KILNS, COOLERS
Bulletin 16-D-8



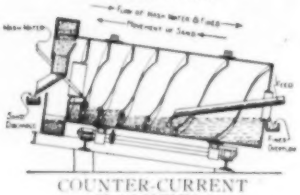
CONSTANT-WEIGHT FEEDERS
Bulletin 33-D-8



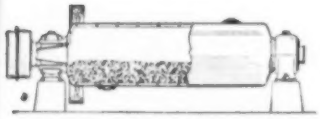
AIR CLASSIFYING SYSTEMS
Bulletin 17-B-8



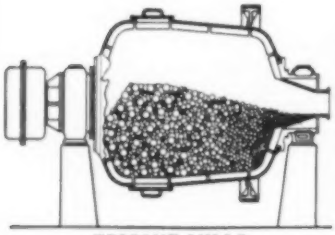
THICKENERS, CLARIFIERS, FILTERS
Bulletin 35-C-8



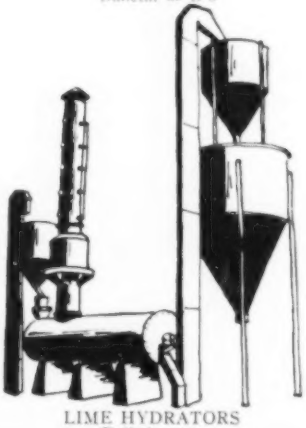
COUNTER-CURRENT CLASSIFIERS SAND WASHERS
Bulletin 39-B-8



CYLINDRICAL TUBE AND ROD MILLS
Write for Bulletin



TRICONE MILLS
Bulletin AH-414-8



LIME HYDRATORS
Bulletin 49-8

HARDINGE
COMPANY, INCORPORATED

YORK, PENNSYLVANIA—240 Arch St. Main Office and Works

NEW YORK 17 • SAN FRANCISCO 11 • CHICAGO 6 • HIBBING, MINN. • TORONTO 1
122 E. 42nd St. 24 California St. 205 W. Wacker Dr. 2016 First Ave. 200 Bay St.

V. C. Genn, general sales manager, recently announced several changes in the sales department of Detroit Diesel Engine Division, General Motors Corporation.

E. F. Bentley, formerly contractors' equipment sales manager, has been promoted to sales operations section manager.

R. V. Baxley

E. F. Bentley

R. V. Baxley, who has been assistant manager in the contractors' equipment sales department, has been appointed sales manager of contractors' equipment sales.

L. H. Wells is assistant manager of contractor equipment sales, transferred to this position from field sales engineer covering Wisconsin, Minnesota, Iowa, the Dakotas and Nebraska.

Paul Merkert, who was the field sales engineer in Indiana, Illinois, Missouri, and Kansas, will take over Mr. Wells's former territory.

The organization of two export corporations to operate as Thor sales and service branches in western Europe and South America is announced by Neil C. Hurley Jr., president, Independent Pneumatic Tool Co., manufacturers of Thor portable power tools.

In western Europe, the new corporation—"Thor Tool Continental, Inc.," is located in Antwerp, Belgium, operating under the direction of Vance G. Turner.

"Thor Tool Hemisphere, Inc.," is the new South America corporation, located in Sao Paulo, Brazil. Donald E. Randall, newly-appointed manager, will supervise Thor sales and service throughout South America from the new headquarters.

Three key appointments in the San Jose (Calif.) Motor Divisions of General Electric's Small and Medium Motor Divisions, have been announced. These are: Charles Stoeckly as manager of the sales division, Carl J. Andersen as manager of the manufacturing division, and L. A. March as manager of the engineering division.

The following appointments have been announced by Raybestos-Manhattan, Manhattan Rubber Division: R. J. Gorecki, factory manager, succeeding the late Harry V. Snyder; W. E. Perkins, assistant factory manager; D. J. Fenelon, director of labor relations; R. Griffith, personnel manager; J. Freeland, manager, cord belt department; and A. P. Schneider, superintendent, cord belt department.

Dr. H. K. Ihrig

The election of Dr H. K. Ihrig as vice-president in charge of research for the Allis-Chalmers Manufacturing Company was announced recently.

Concurrently with this announcement, W. C. Buchanan, president of the Globe Steel Tubes Company, Milwaukee, Wis., and a director of Allis-Chalmers, announced the resignation of Dr. Ihrig as vice-president and director of laboratories of the Globe Steel Tubes Company.

J. T. Farrell has been named assistant to the manager of sales of General Electric's Small and Medium Motor Divisions.

Also announced were the appointments of Howard W. Bennett as manager of the new Gear-Motor and Packaged Drive Sales Division and Paul D. Ross as manager of the new Erie (Pa.) D-C Armored Motor Sales Division.

The Four Wheel Drive Auto Company, Clintonville, Wis., has announced the appointment of William Hanson as manager of a newly created market development and research department.

The department was organized to secure contracts for the manufacture of component parts and assemblies for non-competitive companies, using excess machine and fabricating capacity in the FWD factory. Mr. Hanson will also seek out new products that can be manufactured and merchandised by FWD.

William T. Kelly Jr. has been appointed president of American Brakeblok Division of the American Brake Shoe Company. In addition to his new duties, Mr. Kelly will continue as president of the Kellogg Division, manufacturers of air compressors and paint spray equipment.

Austin C. Ross, manager of the Buffalo works of Worthington Pump and Machinery Corporation, was elected a vice-president of that company at a recent meeting of the board of directors. Mr. Ross will continue to serve as Buffalo works manager.

Retirement of Fred E. Haker as director of purchases for Allis-Chalmers Manufacturing Company, effective October 28, after 50 years of service with the firm, was announced by Walter Geist, president.

Mr. Haker is succeeded by Kenneth R. Geist, who has served as assistant to the director of purchases for the last two years. Mr. Haker agreed to remain until January 1, as a special representative reporting to the president.

In his new post, Mr. Geist will supervise the expenditure of more than $190,000,000 annually in dealing with approximately 8,000 suppliers around the world.

MOVING YOUR DREDGE TO NEW GROUND?

For Efficient Operation

LET YUBA MOVE, REDESIGN AND REBUILD IT!

3 Case Histories Show the Possibilities

REBUILT 3 TIMES

Capital No. 2 (now Biggs No. 2), built in 1906 as YCGF No. 3, has been redesigned and rebuilt 3 times and used in three different areas. Bucket speed was increased from 18.6 to 22.8 feet per minute, bucket capacity increased from 7 to 9 cu. ft., digging depth changed from 60′ to 61½′ and later reduced to 50′, then to 47′. Daily average running time upped from 18.317 to 22.1 hours.

2 DREDGES COMBINED

Biggs No. 1 operating at Rio Bonito, California, with 9 cu. ft. buckets and 50′ digging depth, was assembled in 1935 from the machinery of YUBA No. 48 (erected in 1921 at Fairplay, Colorado) and the rebuilt hull of YCGF No. 4 (Hammonton, California, 1914).

DREDGE MOVED, DIGGING DEPTH CHANGED

Capital No. 3 was originally YUBA No. 39, built in 1916 with 18. cu. ft. buckets and 77′ digging depth, for Hammonton, California. In 1930 it was redesigned, moved to Folsom, California and rebuilt as Capital No. 3 with 62½′ digging depth.

Why guess? Let YUBA help you attain increased efficiency when you move to new ground, or when conditions change and redesign becomes necessary.

Our more than 40 years of bucket ladder dredge experience is available to you for moving, redesigning, and rebuilding old dredges, whether YUBA or not. YUBA's are used all over the world to capture gold, tin, platinum and other minerals, and for aggregate production. Write or wire us NOW. No obligation.

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CABLES: YUBAMAN, SAN FRANCISCO · SHAWDARBCO, LONDON

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After all, it's performance that counts! Not only do these smooth operating screens give top performance day after day . . . they do it year after year . . . thanks to Seco's fully controlled, true circular action. Many Seco screens are now in their fourteenth year of faithful service. May we talk to you soon about how Seco can benefit your screening operation?

Seco distributors are located throughout the United States. Write Dept. L for Catalog #203 and name of your nearest distributor.

Made only by Screen Equipment Co., Inc., Buffalo 21, New York

In Canada: United Steel Corp. Ltd., Toronto, Ontario

SECO

A SECO MODEL FOR EVERY SCREENING NEED

Louis G. Hilkemeier has been appointed chief engineer of the Construction Equipment Division at the Dunellen Works, Worthington Pump and Machinery Corporation.

Formerly a construction machinery engineer with the Chain Belt Company of Milwaukee, Wis., Mr. Hilkemeier has served as chairman of the Technical Committee of the Truck Mixer Manufacturers' Bureau.

Recently appointed distributor in Washington and Idaho for the Koehring Company of Milwaukee, the American Machine Company, Spokane, will handle the complete Koehring line of heavy-duty construction equipment along with the products of the three Koehring subsidiaries, C. S. Johnson, Kwik-Mix, and Parsons companies.

To provide better distribution service for customers, a new building housing both offices and warehouse is being erected at New Orleans, La. for the United States Rubber Company. Located at 900 So. Jefferson Davis Parkway, the structure will be headquarters for the distribution of products for all of Louisiana as well as parts of Alabama, Florida, and Mississippi. It is expected to be completed this month.

Two new dealers to handle sales and service of Hyster industrial trucks in New York and Ohio are announced by the Hyster Company, manufacturers of lift trucks, "Straddle Trucks", mobile cranes, and other handling equipment in Portland, Ore., and Peoria and Danville, Ill.

French Mill Supply Corporation, 640 Varick Street, Utica, New York, with James B. French as president and general manager, has been designated to sell and service Hyster trucks in 16 counties of central New York state.

Speer and Company, 7824 Hamilton Road, Mt. Healthy, Cincinnati, O., has taken over sale and service of Hyster industrial handling equipment in southwestern Ohio, eastern Indiana and northern Kentucky. A. Burns Speer and Charles W. Mayer, both formerly connected with Equipco Sales Company, Hyster's truck dealer in Pittsburgh, Pa., are in charge of the new company.

Another Hyster dealer, Richmond Auto Parts of Richmond, Va., has opened a branch sales office under the name of Virginia Bearing and Supply Company at 354 Salem Avenue, S. W. in Roanoke, Va. H. D. Zimmerman is branch manager.

The Falk Corporation recently announced the promotions of three members of the company's engineering department. George P. Maurer, a Falk employee for 24 years, has been named assistant chief engineer, Gear Technology. W. Stephen Richardson is the new assistant chief engineer, Applications and Special Products. Edward J. Wellauer is the newly appointed assistant chief engineer, Materials and Research.

John E. Ehlert, formerly in the Sales Department of The Euclid Road Machinery Co., has been appointed manager of service and parts. In his new position, Mr. Ehlert succeeds J. M. Fairbanks, who has been promoted to the post of assistant factory manager.

The appointment of John L. Collyer, chairman of the Board and president of The B. F. Goodrich Company, as chairman of the Payroll Savings Advisory Committee for Ohio has been announced.

Cummins Engine Company, Columbus, Ind., has appointed Burton C. Sears assistant regional manager for the Southeastern region. He will work from 800 Ponce de Leon ave. N.E., Atlanta, Ga.

B. C. Sears

E. Dailey

Edward Dailey has been appointed assistant regional manager for the Southwest territory. His headquarters are 1100 Title Guarantee Building, 411 W. Fifth St., Los Angeles, Calif.

The St. Regis Paper Company of New York has announced plans for the construction of a kraft paper and pulp mill at Jacksonville, Fla., and the installation of an additional kraft mill at its Pensacola, Fla., plant. These plants will be supplied from the company's own woodlands, and will produce about 225,000 tons of paper annually. Combined cost of the plants will be about $30,000,000.

The paper produced will be used primarily in the manufacture of multiwall bags. This type of bag was first used in general shipping by the cement industry and was followed by other rock products manufacturers.

Jospeh T. Ryerson & Son, Inc., steel distributors, have moved into their new and larger steel-service plant and office building in Cincinnati, O. The new plant is located at 3475 Spring Grove ave., built at a cost of approximately $1,000,000.

Sales offices and warehousing facilities of The B. F. Goodrich Company's San Francisco district have been expanded into a new location at 1950 Army Street.

Moving from 355 Brannan Street, where the San Francisco offices have been located for 35 years, the new operation provides more adequate warehousing space, better shipping accommodations, and houses the sales personnel of seven divisions under one roof in modern new offices.

Baughman

The HI-SPEED Belt and Bucket Elevator that costs less to own and cuts your operating expense

FOR QUARRIES . . . BLOCK PLANTS . . . BATCH PLANTS . . . PRE-MIX PLANTS . . . CEMENT PLANTS . . . YARDS

Built by production line methods to slash manufacturing costs! Standard length sections and head and boot assemblies are adaptable to the requirements of any permanent or temporary installation.

Large capacity . . . heavy duty. Lifts sand, gravel, other aggregates from 20' to 80'—up to 90 tons per hour. Ruggedly built of high tensile alloy steel.

MOVE *Baughman* CONVEYOR TEAMS ANYWHERE!

Whatever your materials handling problem, BAUGHMAN has the answer. There are unlimited variations and combinations possible in BAUGHMAN equipment — horizontal belt conveyors to any length . . . heavy duty, light duty and inclined elevators . . . auger type and belt type conveyors adjustable to any angle. All equipment is either completely portable or easily disassembled for re-location at any time.

MODEL Q AUGER CONVEYOR

Loads, unloads, conveys any material that becomes fluid in movement . . . from the horizontal to 60°. Volumes from 15 to 50 cu. ft. per minute depending on material conveyed. Positive direct drive. For portable or stationary installations. Available with or without wheels . . . with hopper or in combination.

MODEL 230 BELT CONVEYOR

Another "Hi-speed" product that's long on service and short on price. Pre-fabricated by assembly line methods . . . assembled from standardized units. Result: a ruggedly built conveyor you can well afford to buy. Conveyor illustrated is 30' long, composed of one 20' section, one 7' tail and one 3' head section, from stock. Gasoline or electric power. Portable or stationary.

● *WRITE for information on full line of conveyors and BAUGHMAN self-unloading bodies and spreading equipment.*

Usually Delivered from Stock

BAUGHMAN

BAUGHMAN MANUFACTURING CO., Inc.

811 Shipman Road, Jerseyville, Illinois

"There is a Baughman Distributor Near You"

S. T. Bane, vice-chairman and joint managing director of Lloyds (South Africa), Agricultural, Irrigation and Industrial Machinery Corporation, Ltd., 106 St. George's Street, Capetown, South Africa, announces a distributorship with Worthington Pump and Machinery Corporation, Harrison, N. J., to handle portable air compressors, construction rock drills and air tools.

Lloyds—one of the largest companies of its kind in South Africa—has supplied the Union of South Africa, South-West Africa, and the Rhodesias with agricultural, irrigation and industrial machinery since 1892. The company, which employs 200, has recently purchased blocks of showrooms and offices in Cape Province, Kimberley, and Johannesburg, Transvaal.

James William Brooks has assumed sales and engineering responsibilities for The Lincoln Electric Company in the Indianapolis district. He has been transferred from the company's Boston district.

Thomas L. Dempsey has been added to the staff of the Lincoln Electric Cleveland sales organization as a special field engineer. In addition to duties as sales engineer he has a special assignment of giving engineering service to manufacturers in the Cleveland area who are redesigning machinery for welded steel fabrication.

John F. Kotchian is now serving industrial accounts for The Lincoln Electric Company as a welding engineer in the Company's Chicago district.

Appointment of Wilbur E. Combs as product manager for the L. H. Gilmer division of United States Rubber Company has been announced. In his new position, Mr. Combs will be responsible for sales of V-belts, shock pads, flat transmission belts and other Gilmer products. He will make his headquarters at the Gilmer plant in Tacony, Philadelphia, Pa.

George N. Roberts Jr., formerly in the Accounting and Auditing Department of the Bemis Bro. Bag Co. general offices in St. Louis, has been appointed office manager of the Bemis plant and sales division in Los Angeles, Calif. He fills the position left by C. J. Wassilak, who is returning to active duty in the finance section of the U. S. Army at Seattle, Wash.

Appointment of George W. Blackwood as general sales manager of the Dewey and Almy Chemical Company was announced recently.

Prior to his appointment to the newly-created post, Mr. Blackwood was general manager of the company's rubber specialties division, which has been awarded a government contract for the development of night flight balloons made of synthetic rubber.

The Four Wheel Drive Auto Company, Clintonville, Wis., has announced the appointment of the FWD Trucks and Equipment Company of Harrisburg, Pa., distributor for the entire state. The new company has established its sales and service headquarters at 147 Cameron St., Harrisburg, and is fully equipped to render service to FWD's many customers in the state.

The FWD Trucks and Equipment Company is owned by L. H. Jones, FWD's distributor for the state of West Virginia.

The appointment of Clarence Piehl, formerly manager of the Four Wheel Drive Auto Company's cost department, as executive assistant to M. O. Stockland, sales director, has been announced.

Robert A. Currie, export manager for The Jeffrey Manufacturing Company, died on December 8, 1950, in Columbus, O. He had been with the company for 43 years and was one of the organizers of the Export-Import Club of the Columbus Chamber of Commerce. Mr. Currie was 62 years old.

Elliot H. Hooper, president of Hooper Equipment Inc., 1256 South State Syracuse, N. Y., announces a distributorship to handle Worthington Pump and Machinery Corporation construction equipment. Mr. Hooper formerly was with the Ingersoll Rand Company. His assistant, J. E. Blanch, formerly was a district manager for R. C. LeTourneau Company.

No Weighing Problems for these Plants in '51

MERRICK SCALES ARE ON THE JOB

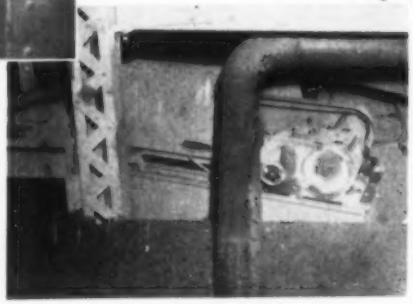
In South Dakota

View at left shows one of two MERRICK Weightometers in the South Dakota Cement Plant at Rapid City, South Dakota.

This is the only state-owned and operated cement plant in the U. S. Recently modernized and enlarged, the new installation is considered the last word in cement plants, in both equipment and operating methods.

It is significant that the two MERRICK Weightometers* are responsible for weighing all of the clinker produced, thus providing a valuable check on production, fuel economy, and clinker inventory.

In Montana



The Hungry Horse Dam project, near Glacier National Park in Montana, requires vast quantities of material meeting exact specifications.

View at right in sand and gravel plant supplying aggregates shows a MERRICK Feedoweight* controlling feed of sand into rod mill. Three other Feedoweights blend the fine, medium, and coarse sand for storage.

A MERRICK Weightometer records amount of partly-processed raw material going from storage pile to final preparation plant.

Established for Over 40 Years

*Reg. U. S. Pat. Off.

Write for Bulletin

MERRICK Scales are the "measure of dependability" in hundreds of plants where bulk materials are handled on belt conveyors.

These fast, automatic machines provide instant and accurate weight information at any stage of processing.

All MERRICK units are finely designed and durably built for continuous, economical, trouble-free service. Their use assures high output and product uniformity.

MERRICK SCALE MFG. CO.

180 AUTUMN STREET • PASSAIC, NEW JERSEY

legal decisions

By LEO T. PARKER
Attorney at Law
Cincinnati, Ohio

In a recent interview an official of a well known nonmetallic production and distribution corporation asked these questions: "Can an official or director of a corporation lawfully accept money in addition to his regular compensation for valuable services rendered the corporation? Can an official of one corporation lawfully accept money for services rendered another corporation? How about profits earned by a corporation official?"

According to a recent higher court, the affairs of corporations are generally intrusted to the exclusive management and control of the board of directors, and there is an *inherent* obligation not only that they will use their best efforts to promote the interest of the shareholders, but that they will *in no manner* use their positions to advance their own individual interest as distinguished from that of the corporation. Also, the court held that it is illegal for a corporation's official to acquire interests that may conflict with the fair and proper discharge of his duty. In other words, a corporation is legally entitled to the supervision of all the directors who must at all times act for the best interest of the corporation.

For example, in *Indurated Concrete Corporation v. Abbott*, 74 Atl. (2d) 17, the testimony showed facts as follows: The charter of the Indurated Concrete Corporation was forfeited several years ago for failure to pay the Maryland State Franchise Tax. At that time one Abbott was a duly elected director. Later the charter of the corporation was revived. Due to certain affairs of the corporation attended to by Abbott, he presented a claim against the corporation for several hundred dollars. At a meeting of the directors his claim was approved by *one* majority of the directors. This one majority was Abbott's own vote.

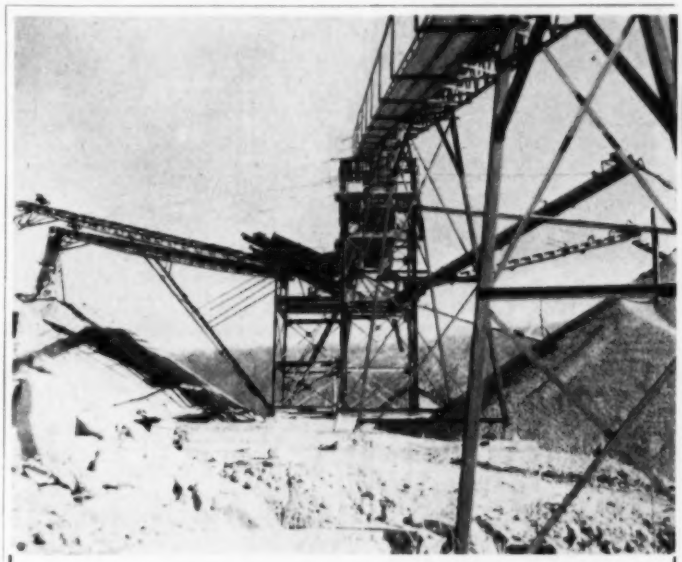
In subsequent litigation the higher court held that since there was no agreement or contract between a director and a corporation for payment of services rendered by the director, and since it was his vote alone which constituted a majority necessary to pass his claim for services at the directors' meeting, payment for such services was improper, and the corporation was entitled to recover the compensation in a suit.

For comparison, see *Willis*, 170 Fed. (2d) 119. Here the higher court held that a corporation official must return to the corporation all profits he earned on a secret lease of property which he should have leased to and for the benefit of the corporation.

And again see *Holland*, 66 Atl. (2d) 319. In this case a corporation's confidential employee took secret employment for two years with a competitor at $8,500 per year.

In subsequent litigation the higher court ordered the employee to repay to his employer $17,000 he had earned during these two years.

Therefore, in view of these late higher court decisions this low is established: (1) A corporation's official or director cannot legally accept extra compensation for additional or unusual services rendered the corporation, if his vote is the vote which approves the payment of money to himself; (2) A director of a corporation cannot make any secret contracts by which he himself profits personally when in fact he could have made the contract for the benefit of the corporation; (3) and directors of a cor-



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Cable replacements minimized. Forged connecting link, protected by deep recess, adaptable for swivel or shackle. Strong alloy steel pin. Furnished complete as shown.

2000 to 8000 lbs.

Prompt Shipments

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poration must sacrifice their own personal interest and anticipated profits for the benefit of the corporation.

Must Maintain Watchman

According to a recent higher courts, a road contractor who fails to maintain a flagman or watchman to keep traffic in safe alignment is liable for subsequent injuries to all persons, including employees, for this negligence.

For example, in *Austin Road Company v. Pope*, 216 S. W. (2d) 563, it was shown that the Austin Road Company had a contract to resurface a street. A man named Pope was hired to haul materials in his motor truck to a large concrete mixing machine operated on the job by the Austin Road Company. One day Pope was backing his truck along the narrow strip towards the mixer where a man named Jackson was working on the curb. At the point where he started backwards he opened the left door of his truck and leaned out to observe his progress from that side. He could not or did not see Jackson, who was then pushing a wheelbarrow along the west side of the street. He ran his truck against Jackson, causing the latter serious bodily injuries. Jackson sued for damages and proved that Pope was negligent since he did not keep careful watch while backing his truck.

In holding Jackson entitled to recover $5,000 damages from Pope, the higher court said that Pope was guilty of negligence in backing his truck into Jackson. In holding the Austin Road Company liable to Jackson for $5,000 damages, the court said:

"The jury found that the Austin Road Company failed to maintain a watchman, which was negligence and a proximate cause."

Implied Warranty

Modern higher courts consistently hold that a seller always is liable on an "implied" guarantee unless the sale contract contains a clause to the effect that the seller gives *no* guarantee.

For illustration, in *D.D.C. v. Knowles*, the testimony showed facts, as follows: One Knowles purchased a large farm which was then irrigated by water taken from a canal. The first season being extremely dry, Knowles decided to procure additional water for irrigation purposes by pumping water from a river. He consulted the "field man" of D.D.C., explaining that he wanted a pipe line that would carry 1,500 gallons of water per minute, under pressure from the river to the edge of his farm and from that point 1,000 gallons per minute to the end of the line. The field man examined the land and recommended the use of 10-in. concrete pipe, informing Knowles that his company would not guarantee the pipeline unless it installed the same. Knowles agreed, and ordered the pipe installed. After further discussion, it was agreed that Knowles would dig the ditch for the installation of the pipe. Knowles did this job and D.D.C. laid the pipe. After the job was completed, Knowles started the pump. The

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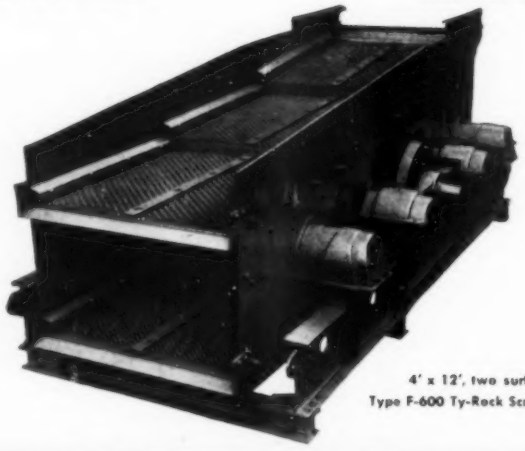
TY-ROCK SCREENS
BALANCED RUGGED



4' x 12', two surface
Type F-600 Ty-Rock Screen

THE W. S. TYLER COMPANY
CLEVELAND 14, OHIO
Manufacturers of Woven Wire Screens and Screening Machinery

pipe leaked at many joints. The field man sent men to fix the line, but whenever the water was turned on, leaks would appear at the joints of the concrete pipe and were sometimes so violent as to create holes of considerable size in the soil. Knowles testified that two-thirds of his crop was lost due to lack of water.

The higher court held D.D.C. liable in damages to Knowles, saying:

"The evidence discloses, beyond question, that respondent (D.D.C.) knew what appellant (Knowles) wanted and undertook to install a pipeline that would answer the purposes. From the evidence, it appears that the pipeline never did satisfactorily or even reasonably accomplish the purpose for which appellant (Knowles) ordered its installation. . . . It is generally recognized rule of law that an implied warranty of fitness of goods for a particular purpose, known to the vendor, arises when the purchaser, who is not informed as to the best article to accomplish his purpose, relies upon the advice of the seller. . . . It appears that appellant (Knowles) suffered damage as the result of the defective operation of the pipeline."

The courts hold that manufacturers and sellers may avoid all liability on implied guarantees by inserting in the contract a clause which reads: "There is no implied or other guarantee on the subject of this sale. This contract contains all obligations assumed by the seller, and all verbal statements, guarantees and promises not included in this contract are hereby cancelled."

Void Freight Rates

According to a recent higher court, a contract to transport freight at a lower rate than approved by the Public Service Commission is void. Hence the carrier can sue the shipper and recover the difference between the legal rate and the lower rate specified in either a verbal or written contract.

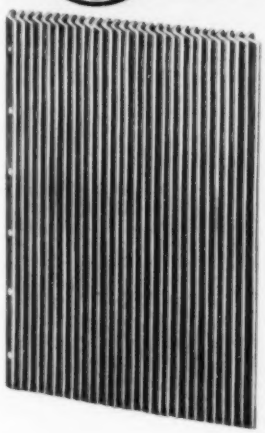
For example, in *Tom, Inc. v. McKesson*, 89 N. E. (2d) 3, it was shown that a common carrier trucking company made a written contract with a corporation to transport its products. This contract was made several years ago, and the freight rates specified in the contract were considerably lower than rates approved by the Public Service Commission.

After a few years the carrier sued the corporation to recover a large sum of money as additional payment for the transportation and delivery of goods. In other words, the carrier's suit was based on the contention that the low freight rates clearly specified in the written contract were considerably less than the rates approved by the Public Service Commission, and therefore invalid.

It is interesting to observe that the court held that a common carrier can recover from the shipper the difference between the low freight charges paid under the contract, and the rates specified by the Public Service Commission in its schedule. The court said:

"One to whom a certificate has been granted is bound to collect and the shipper to pay the established rates for the

Unit Type CLINKER COOLER GRATE
Saves Assembly Cost



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This improved type of Clinker Cooler Grate is *different* . . . and definitely better . . . because it comes as a completely assembled unit, ready to drop in place without any expense for assembly work on the job. Its unique design permits a saving in weight, insures increased service life and reduced maintenance. Space for air inlets between bars is controlled by the size of small bosses on back of each bar. Bars are screwed up tight in close contact, and kept in place by two Pyrasteel rods, welded at the ends.

Our customers, including nationally known cement companies, have been using these Clinker Cooler Unit Grates with satisfaction and economy.

Write for details on special types of Alloy Steel Castings.

CHICAGO STEEL FOUNDRY COMPANY
Kedzie Avenue at 37th Street
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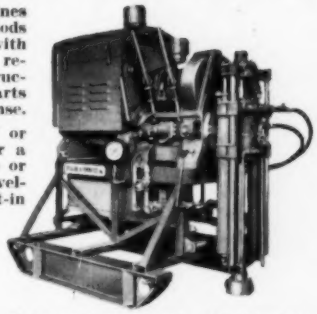
Makers of Alloy Steel for Over 40 Years

60 YEARS of Successful Experience in DIAMOND CORE DRILLING

enables us to manufacture drilling machines that can be relied upon for long periods of continuous high-speed operation, with greatest possible percentage of core recovery. Modern designs, rugged construction, and liberal use of alloy-steel parts minimize time losses and operating expense.

Swivelheads can be either "Screwfeed" or "Hydraulic." Power-unit can be either a gasoline or Diesel engine, an air engine or an electric motor—each driving the swivelhead and hoisting drum through a built-in four-speed sliding-gear transmission. A complete line of improved accessory equipment provides for every drilling and sampling requirement. Catalog mailed promptly on request.



Model 40-C Core Drilling Machine, with Gasoline Engine Power Unit and Oil Operated Hydraulic Swivelhead.

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Besides being manufacturers, we are also one of the largest contractors for any type of Core Drilling—including Grout Holes and Grouting. Experienced crews and supervisors are available at all times for service anywhere in the world. Estimates, and constructive suggestions whenever possible, submitted promptly without charge.

"TRUCAST" BORTZ DIAMOND BITS

have proved their superiority for years in all types of rock formation. Bits may be furnished with various grades of bortz diamonds, set in a matrix of either Beryllium Copper or Beryllium Nickel alloys. Available in a wide range of standard and special sizes ranging from 1½" to 7¾" in diameter.

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Korb-Pettit Wire Screen is not only first quality in material and workmanship but is engineered for the job involved. Available in High Carbon Spring Steel and Oil Tempered Spring Steel for extreme abrasion resistance. Designed for all types of vibrators and rotary equipment. Request literature.

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Machine and Window
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service rendered, and neither is excused through fraud, accident, mistake or any other cause from collecting or paying the said rates."

Must Prove Injury

Modern higher courts consistently hold that no injured employee may receive compensation under the State Workmen's Compensation Act unless he proves conclusively that he was injured while serving his employer.

For example, in *Furlow v. Magnolia Sand and Gravel Company*, 47 So. (2d) 106, it was shown that one Furlow was employed as a truck driver and earned an average weekly wage of $32. He alleged that on the afternoon of February 20, he sustained injuries to his back while loading gravel at the pit of the Magnolia Sand and Gravel Company. Furlow attempted to prove by a witness named Ward that he was injured at the gravel pit, and later went to and was treated at a hospital. However, other testimony indicated that Furlow had received the injury elsewhere. The higher court refused to award compensation to Furlow, saying:

"It was incumbent upon the plaintiff (Furlow) to prove by a preponderance of the evidence his alleged accident, his alleged injury and his alleged disability. . . In concluding this opinion, I might state that the court was not favorably impressed with the testimony of the plaintiff (Furlow) or his witness Marvin Ward. The credibility of both of them in my opinion is doubtful."

Land Flooded

According to a recent higher court, a sand-and-gravel company which operates on a running stream is liable for damage to lower land if the testimony shows that negligent mining operations by the company caused the private land to be flooded.

For example, in *T. Sand Co. v. Pilling*, 47 So. (2d) 236, the testimony showed facts, as follows: The T. Sand Co. operates a sand-and-gravel pit and plant on a site located on its lands which border on a running stream. A property owner named Pilling owns land on the stream below the company's land. Pilling sued the company, alleging that the digging operations were negligently conducted and caused the stream bed to be filled with muck or debris "thereby constituting an entrapment and danger to domestic animals". Also, Pilling proved that the muck caused the stream to overflow repeatedly, "thereby permanently depositing muck and debris from the mining operations on Pilling's lands which damaged and rendered valueless much land". Pilling asked the court to hold the company liable for damage to his farming land. In holding the company liable the higher court said:

"One of the prime claims for damages was that the frequent overflow of the stream caused muck and filth to be deposited on appellee's pasture lands, thereby rendering the grass unwholesome for animal consumption. The proof supported the additional contention that,

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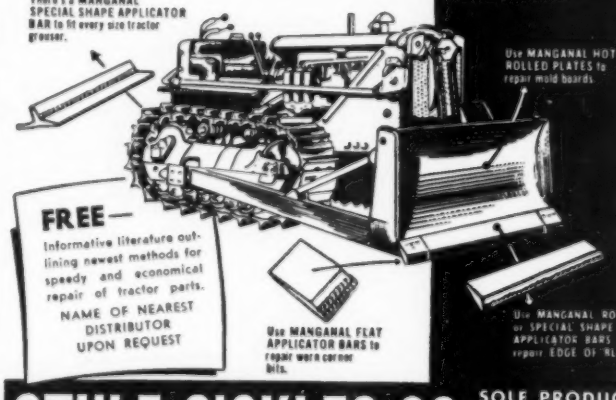

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because of its continuous muddy condition, the water in the stream was unfit for stock to drink. It is a matter of common knowledge that scarce or unwholesome food and water will cause stock to lose weight and in the course of time their physical condition will become poor."

City Liable for Pedestrian's Injury

Considerable discussion has arisen from time to time over the legal question: "If a city issues a permit to a contractor to dig a trench or make an excavation, can the city be held liable for injuries caused users of the street due to negligence of the contractor in failing to erect barricades, or otherwise place warnings of danger?"

According to a recent higher court, the answer is yes.

For example, in *Ledbetter v. City of Great Falls,* 213 Pac. (2d) 246, the testimony showed facts as follows: The city issued a permit to a contractor to lay water service pipes in a street. The contractor made the necessary excavation, and that night a pedestrian was seriously injured when he fell into the excavation. He sued the city for damages, alleging that the city was liable because it failed to see that such excavation was protected by red lights and barricades. The pedestrian proved that the excavation was uncovered, unlighted, unbarricaded and open the night he was injured.

The counsel for the city argued that the injury resulted from negligence of the property owner and contractor who made the excavation, and for this reason the city could not be held liable.

The higher court refused to agree with this contention, saying:

"It is the duty of a city, owed to the public generally, to keep its public streets or walks in a reasonably safe condition for travel. Such duty, as respects the public, rests primarily upon the city, and the obligation to discharge this duty cannot be evaded, suspended or cast upon others. . . Having issued a permit to open the excavation, it became the duty of the city to exercise ordinary care to make reasonable inspection to see that barricades and red lights were placed, so that the street was in a reasonably safe condition for travel. Failing in this, the city was negligent."

For comparison, see *City of Denver v. Aaron,* 40 P. 587, 588. The Supreme Court said:

"The duty of keeping its streets in repair and in reasonably safe condition for travel in the usual modes rests primarily upon the municipality. If it authorizes dangerous excavations to be made in its streets, either by contractors directly under it or by persons to whom license for the purpose is granted, it cannot unburden itself of its responsibility upon those by whom the work is done. If it permits others to tear up its streets, it is its duty to see that they do the work in a safe manner."

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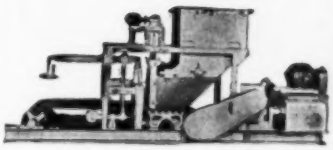

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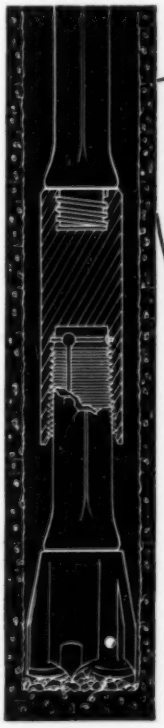

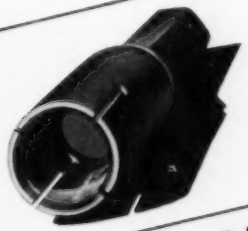

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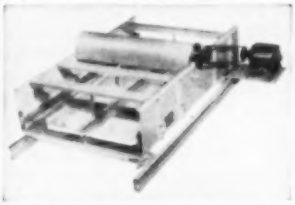

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traffic news

CENTRAL TERRITORY RAILROADS FREIGHT TRAFFIC COMMITTEE

Docket 88000 (1)—Proposed to establish on slag, crude or granulated, in open-top cars, car'loads, minimum weight 80 percent of marked capacity of car, from Youngstown, O., to Cleveland, O., 146 cents net ton. (Rates are not subject to ExParte 162, 166 and 168 increases).

Docket 88014 (2)—Proposed to establish on crushed limestone, in bulk, carload minimum weight 90 percent of marked capacity of the car, except that when car is loaded to full visible or cubical capacity, actual weight will apply from Calcite, Mich., to Chicago and Gary and Buffington, Ind., 238 cents gross ton.

Docket 88022 (2)—Proposed to establish on slag, crushed or crushed commercial (not granulated), a product of iron and steel blast or open hearth furnaces, in bulk, carloads, in closed equipment only, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Chicago, Ill., to Muncie, Ind., 267 cents net ton.

Docket 88036 (1)—Proposed to establish on slag, crude, granulated, crushed or commercial (a product of iron and steel furnaces), in bulk, in open-top cars, in straight or mixed carloads, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Hamilton, O., to Chicago, 262 cents per net ton.

COLORADO-WYOMING COMMITTEE

Docket 110 (Shipper)—Proposed to establish on sand, gravel, and stone, crushed, minimum weight 90 percent of marked capacity of car, from Pueblo, Colo., to Jansen, Colo. Proposed, 83 cents per ton of 2,000 lbs., subject to ExParte 162-6-8 increases.

GENERAL FREIGHT TRAFFIC COMMITTEE EASTERN RAILROADS

Bulletin G-2961 (Shipper)—Proposed to establish on limestone screenings, agricultural, unburned, in bulk, in open-top cars, carload minimum weight 90 percent of marked capacity of car, from Maple Grove and Narlo, O., to destinations in West Virginia as shown in Items 5700-C to 6060-B, inclusive, of Central

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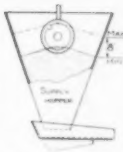

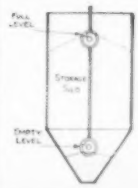

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Territory Railroad FT 218-N, ICC 3758 and pages 95 to 123 inclusive of N.Y.C. &ST.L. Railroad GFD 584-K, ICC 6059, rates reflecting ICC Docket 15329, West Penn joint line scale for short line mileages progressed in 25-mile blocks. Rates to representative points, such as Buckhannon, 316 cents; Cameron, 255 cents; Clarksburg, 292 cents; Fairmont, 279 cents; Moundsville, 255 cents; St. Mary's, 279 cents; Shelton, 316 cents; and Weston, 304 cents. These rates are in cents per net ton of 2,000 lbs.

NORTH PACIFIC COAST FREIGHT BUREAU DOCKETS

Docket (X) NC-1583 (Shipper)—Proposed to establish on sand and gravel, carload, from Richland, Wash., to Umatilla, Ore., a rate of 5 cents per hundredweight, minimum 100,000 lbs.

NORTH PACIFIC COAST FREIGHT BUREAU AND PACIFIC SOUTHCOAST FREIGHT BUREAU —JOINT DOCKET

Docket JT-1280 (Shipper—amended) Add following paragraph to docket. Common lime, including magnesium lime, hydrated or hydraulic, quick or slaked, in packages or bulk. Sloan and Henderson, Nev., to Portland, Ore., Spokane and Yakima, Wash., and other North Coast points request for alternate rate of 52 cents per hundredweight, minimum 40 tons.

PACIFIC SOUTHCOAST FREIGHT BUREAU PROPOSALS

Docket (X) 1390 (Shipper)—Proposed to establish on lime fluxing, carload, from Henderson, Nev., to Pittsburg, Calif., rate of 25 cents per hundredweight, minimum 50 tons.

WEEKLY DOCKET AND STATUS REPORT OF PRIOR SOUTHERN FREIGHT ASSOCIATION PROPOSALS

Docket A 5548 (c)—Proposed to establish on phosphate rock, phosphatic limestone, 50 tons or marked car capacity, if less, from Mt. Pleasant-Centreville, Tenn., district to Southern Railway Station, Smythe, Ind., through Huntingburg, Ind., inclusive 440 cents net ton. To alternate with present rate of 552 cents, 30-ton minimum weight, not subject to X-162-6-8.

TRANS-CONTINENTAL FREIGHT BUREAU APPLICATIONS

Docket 6989 Reopened (Shipper)—Limestone, crude, crushed, ground or pulverized, in multiple-wall paper bags, carload. Request rate of $7.20 per net ton (including all increases), minimum 50 tons from Victorville, Calif., to Sweetwater, Tex.

FREIGHT TRAFFIC COMMITTEE
Trunk Line Territory Railroads

Docket TL M-1068 (Carrier)—Proposed to establish on limestone, ground or pulverized, in closed cars only, carload minimum weight 50 tons from Lime Crest, N. J., to Newburgh, N. Y., $2.00 per net ton, including all increases, in lieu of $2.38.

WESTERN TRUNK LINE NEW APPLICATIONS

Docket E-41-1317 (Shipper)—Proposed to establish on crushed stone, carload, in closed cars from Sussex, Wis., to Moorhead, Minn., $5.00 per net ton, inclusive of X-162-6-8 increases.

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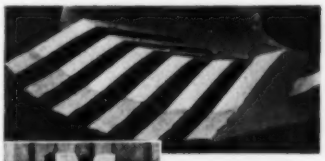

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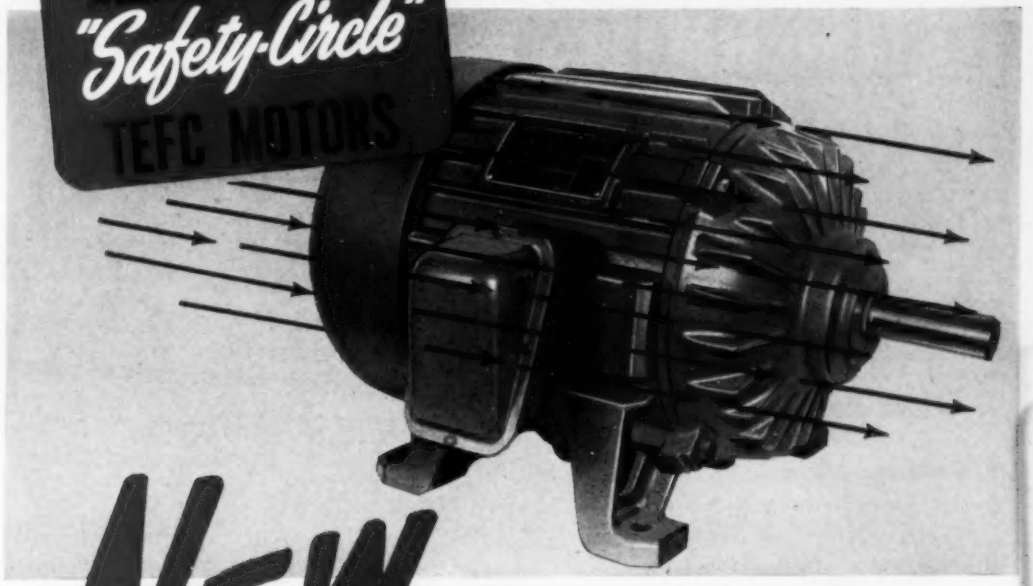

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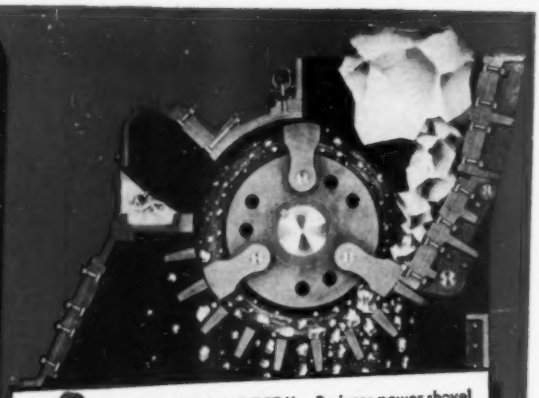
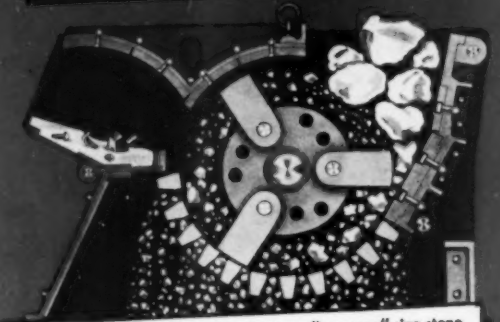
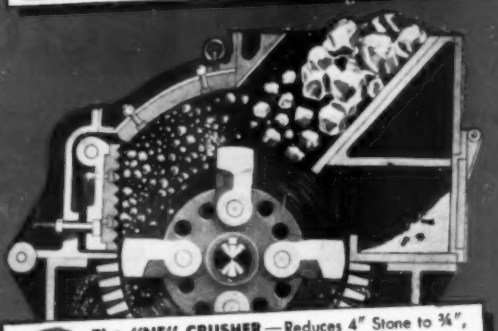


1 The **"SUPER SLUGGER"**—Reduces power shovel loaded rock to 1½" or ¾" stone in One Operation. Capacities 65 to 550 tons per hour.



2 The **"SLUGGER"**—Reduces "one-man" size stone (75 to 100 lb. pieces) to 1¼", ¾" or Agricultural Limestone in One Operation. Capacities 4 to 100 tons per hour.



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SOUTHERN MATERIALS COMPANY ALMOST DOUBLES WIRE ROPE SERVICE LIFE WITH J&L CENTERFIT

J&L STEEL

ABOVE: This Dravo C-14 whirler crane with a clamshell bucket moves hundreds of tons of sand and gravel daily. Holding and closing lines are J & L CenterFit wire rope.

LEFT: CenterFit closing line on this multiple reeved clamshell lasted an average of more than five weeks longer than competing ropes in this application.

J&L CenterFit Holding and Closing Lines Outlast Nearest Competitor by an Average of More Than 5 Weeks

Here's a report on the service life of J & L CenterFit Wire Rope from the Southern Materials Company, Richmond, Va., large producers and handlers of Sand, Gravel, Ready Mixed Concrete, SOLITE and Slag.

Southern Materials used a Dravo C-14 whirler crane with a 2 cu. yard clamshell bucket to test four competing brands of wire rope, among them J & L CenterFit wire rope.

Among the ten ropes tested J & L CenterFit holding and closing lines had an average service life of nearly twice that of the competing brands.

This is how the ten ropes compared:

Brand	Service Life
A	5 weeks 3 days 5 weeks 1 day 5 weeks 1 day
B	5 weeks 3 days 5 weeks 6 days
C	7 weeks 4 weeks 6 days
J&L CENTERFIT	10 WEEKS 2 DAYS 14 WEEKS 10 WEEKS

It's no wonder that equipment owners are turning to CenterFit—the new wire rope produced exclusively by J&L for use on equipment having small sheaves and drums.

Unlike conventional wire ropes CenterFit is laid together in one operation. All strands run in the same direction with outside strands fitting snugly into the valleys between inside strands. This unique construction means more steel and fewer voids than any conventional wire rope. The result: Higher Strength . . . Greater Flexibility . . . Easier Handling . . . Longer Service Life.

Get the facts on this new wire rope design. Write Jones & Laughlin Steel Corporation, 465 Jones and Laughlin Bldg., Pittsburgh 30, Pa., for our free booklet, "CenterFit".

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From its own raw materials, J&L manufactures a full line of carbon steel products, as well as certain products in OTISCOLOY *and* JALLOY *(hi-tensile steels).*

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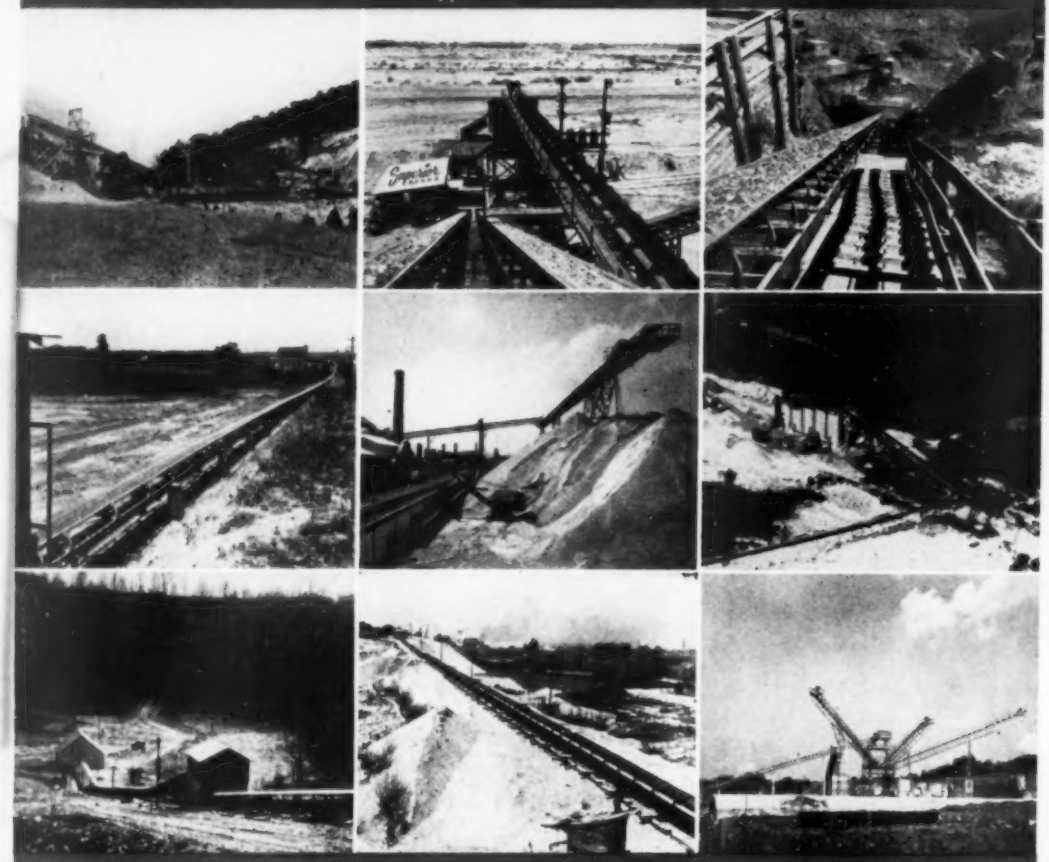
STONE HANDLING!

These are tough jobs—requiring sturdy equipment for long life and uninterrupted service.

That's why these operators specified **Continental**



OTHER PRODUCTS: Elevators, Feeders, Screw Conveyors, Pulleys, Trippers, Buckets, Sprockets, Takeups and Bearings.

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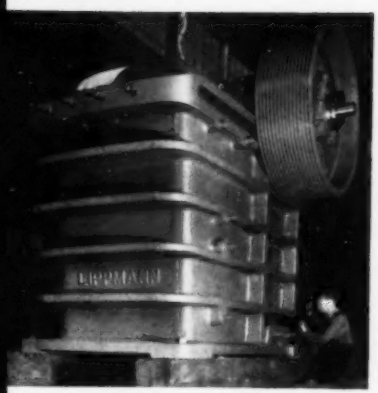
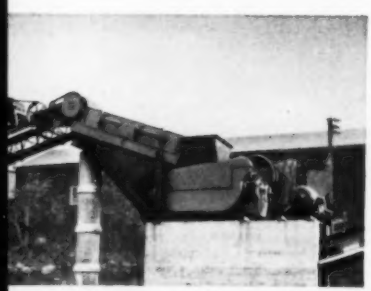
Miron Brothers Fastest Growing Aggregate Producer in Canada . . .

Rock-Ravenous 36 x 48 GRIZZLY KING Jaw Crusher Often Produces 6300 Tons per Day . . . Works 20 Hours a Day, 6 Days a Week Without Shutdowns! And Jaw Dies Haven't Even Been Born Used!

Actual weight chart of a typical day's production, recorded by scale under discharge conveyor, is proof that Grizzly King's output reaches 560 tons per hour.



In complete Lippmann plant, Miron Bros. makes six sizes of stone — everything from ag-lime to ballast rock.



Other Lippmann equipment at Miron: two 48 x 24 roll crushers, five 5 x 12 Screen-All vibrating Screens, 591 ft. of belt conveyors with Life-Sealed Ball Bearing Idlers.

Two years ago the site of the Miron Bros. plant at Ville St. Michel, Quebec, was a farm. Today they are turning out what is believed to be more aggregate than any other Canadian producer — 300 tons per hour, 20 hours a day, 6 days a week—the amazing total of *2½ million tons in their first 18 months.*

And they're doing it with one primary in a plant that's completely Lippmann-engineered and Lippmann-built . . . . from the 36 x 48 GRIZZLY KING Jaw Crusher, the world's highest capacity overhead eccentric, through scalper, belt conveyors with Life-Sealed Ball Bearing Idlers, Screen-All Vibrating Screens with perfect-circle throw, and Roll Crushers.

They're feeding hard, blast-run Niagara Limestone up to 36 in. directly to the GRIZZLY KING, with the discharge opening set *down to 3 in.* And the crusher actually idles a good share of the time!

Amazing Capacity!

There isn't another crusher built that approaches GRIZZLY KING's capacity — extra long jaws, engineered crushing action, complete oil lubrication and alloy steel construction add up to the rock-eatingest crusher on the market today. And its low-maintenance operation is proved by the fact that Miron *hasn't even turned the jaw dies* after 2½ million tons.

You, too, can pile up extra profits with the world's lowest-cost-per-ton-crushed rock and ore machinery. And Miron is doing all this with an *investment of only $125,000* in super-capacity, low-cost Lippmann equipment.

Write today for all the facts on the complete line of Lippmann machinery for pits, mines and quarries. Follow the example of leading operators the world over who choose Lippmann above all other makes.

2008

WRITE FOR ALL THE FACTS on the complete Lippmann line for pits, mines and quarries:

Grizzly King Jaw Crushers (Bulletin 1100), Screen-All Vibrating Screens (1200), Belt Conveyors (1400), Pulverizers (1160), Life-Sealed Ball Bearing Idlers (1410), Gyra-Gnome Secondary Crushers, Circuit Rider Self-Propelled Crushing Plants, Portable Washing Plants (1650), Apron Feeders (1450).

LEW LIPPMANN ENGINEERING WORKS
4603 W. MITCHELL STREET
MILWAUKEE 14, WISCONSIN

HISTORY REPEATS...

AT THE ARKANSAS LIMESTONE CO.

There's 20 years difference in the ages of these two Lorains working in the Arkansas Limestone Co. quarry at Myersville Spur, Oklahoma. The 20-year veteran (in background) is a Lorain-75 and still at it. Up in front, it's a husky, new 2-yard Lorain-820 shovel that has all the rock-digging qualities of its "grandpappy"—plus important new Lorain features that are the latest advancement in a rock digging shovel...

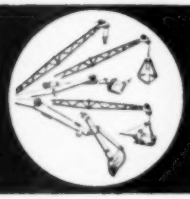
- Hydraulic Coupling—No Stall—No Shock
- Double Center Drive Pinion for Power Concentration
- Extra Wide Clutches—Sure-Acting—Long-Life
- Independent Chain-Drive 2-Speed Crawler
- New, Wider Crawler Treads—Drop-Forged, Break-Resistant
- All-Welded, All-Steel Shovel Boom
- Powerful, Independent Chain Crowd

Only by constant improvement through the years have new Lorain-820's earned their reputation as the big, heavy-duty shovels for the toughest digging in mines, pits and quarries. And you can be sure that these modern, new Lorains will outlive the old-timers that have stacked up records of 20 and 30 years or more. Get the "820" long-life story from your Thew-Lorain Distributor.

20-YEAR VETERAN
This Lorain-75 went to work for Arkansas Limestone Co. over 20 years ago—and it's still going strong.
NEW LORAIN-820
Steps up limestone production—helps to produce 30,000 to 40,000 tons per month. Quarry face is 85 feet high.

THE THEW SHOVEL CO.
LORAIN, OHIO

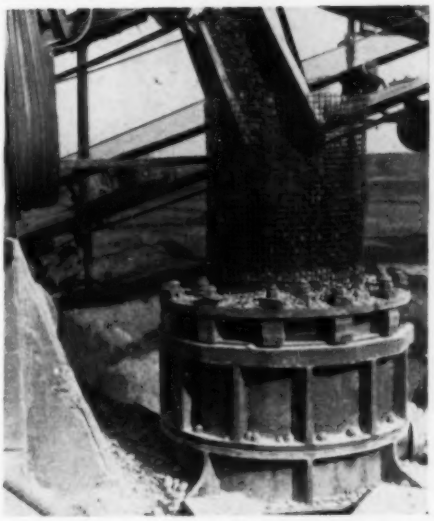
THEW **LORAIN**® *on CRAWLER or RUBBER*



SHOVELS
CRANES
DRAGLINES
CLAMSHELLS
HOES

FINE REDUCTION at LOWEST COST with KUE-KEN* GYRACONES

Kue-Ken principle of "Crushing without rubbing" gives lowest cost production of fine crushed rock. Entirely new gyratory design, field proven. Kue-Ken Gyracone Crushers permit fine settings with choke feed on hardest gravel. The 3 ft. gyracone shown at right is crushing hard river gravel under choke feed. Adjustment for wear to maintain product size is only once every two weeks. Daily adjustment was necessary to maintain product size on previous well known gyratory crusher.

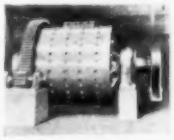


3-foot KUE-KEN GYRACONE crushing hard river gravel runs 10 times longer than previous well-known gyratory, without adjustment to compensate for wear.

Less Wear with Modern Design

Crushing without rubbing gives Kue-Ken operators 5 to 10 times longer life to crushing faces. Rock is instantly gripped and crushed between the crushing faces without slipping and rubbing. Rock is not forced upwards grinding away the costly crushing faces as in ordinary gyratory crushers. Wear and power is reduced to the minimum, capacity is maximum.

Saves on installation. Very low headroom required, 18" gyracone is only 30¼" high. 3 ft. size only 45" high. Fits easily into flow sheet. Takes choke feed, has no restricting spiders to reduce flow. Usually uses shorter elevator and no feeder is required. Lower horsepower for drive saves on power. Lighter weight saves on freight, foundation and installation costs. Powerful, compact yet with larger, stronger shafts which provide greater bearing area, less bearing pressure per sq. inch . . . cooler running, longer life. Completely pressure lubricated with filtered oil. Kue-Ken oil seal keeps oil in and dirt out without rubbing against high speed, gritty surfaces. Lasts for years. Automatic release for both tramp iron and overload. Product size is quickly and easily changed. You save with Kue-Ken.



Rib-Cone Ball Mill

Get Complete Facts — Write for Bulletins

YOUR NEAREST WESTERN DEALER

California (Southern)—Migula & Co., Pasadena
Montana—Caird Engineering Works, Helena
Texas—Engineering Sales Co., San Antonio
Utah—Lund Machinery Co., Salt Lake City

Licensed mfgr. for Eastern U. S., Canada and Puerto Rico. Pennsylvania Crusher Co., Broad and Arch Sts., Phila., Pa.

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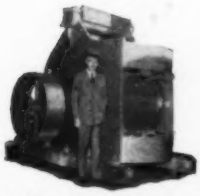
- Please send your free bulletin on

JAW CRUSHERS ☐ BALL MILL ☐
GYRACONES ☐ SCREENS ☐

Name .....
Company .....
Address .....
City ..... State .....



Kue-Ken Jaw Crushers

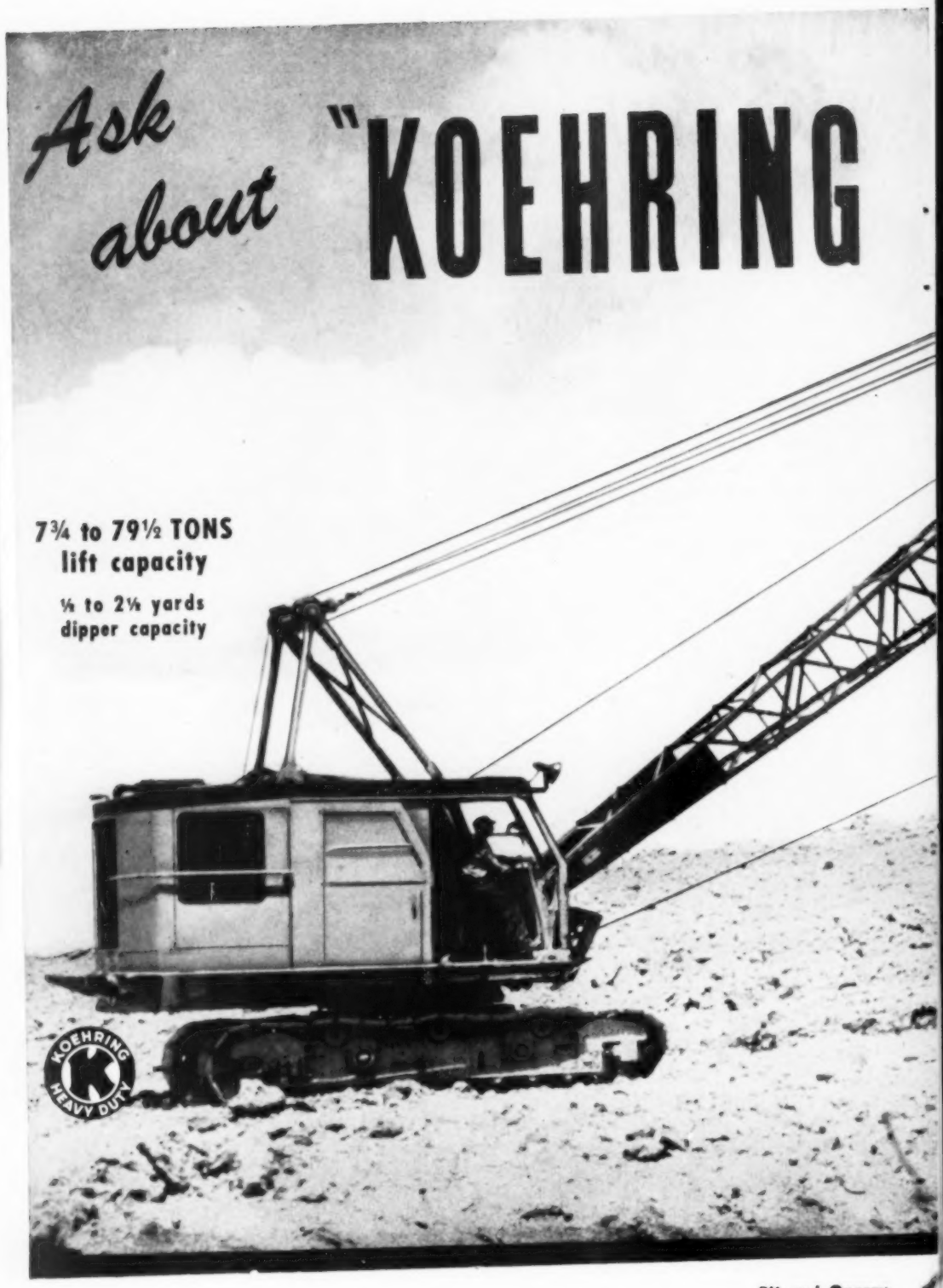
Overstrom Screens

*Pronounced Que-Ken. U.S. and Foreign Patents Pending.

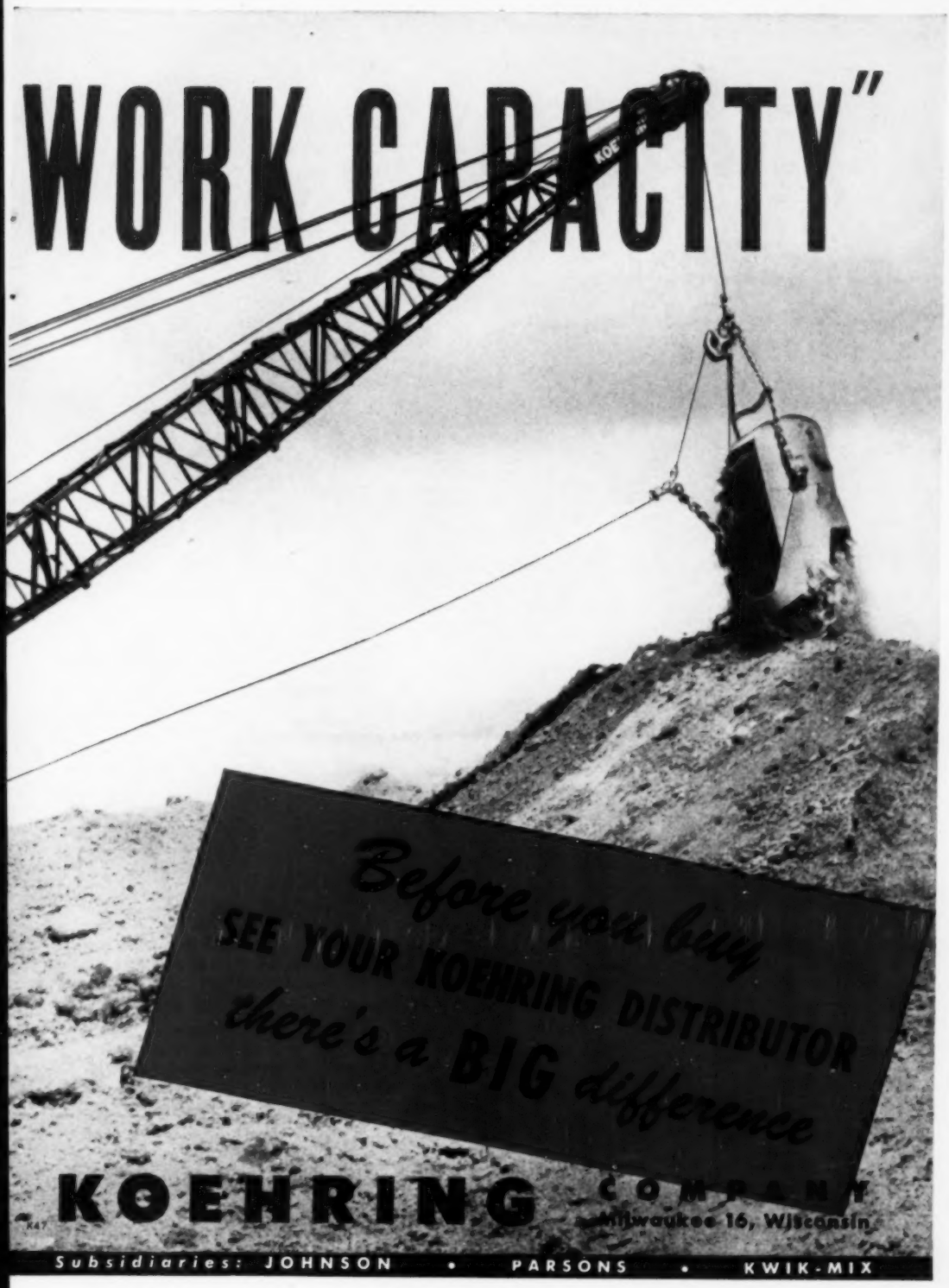
547 CHESTNUT ST. • OAKLAND 20, CALIFORNIA

STRAUB MFG. CO.

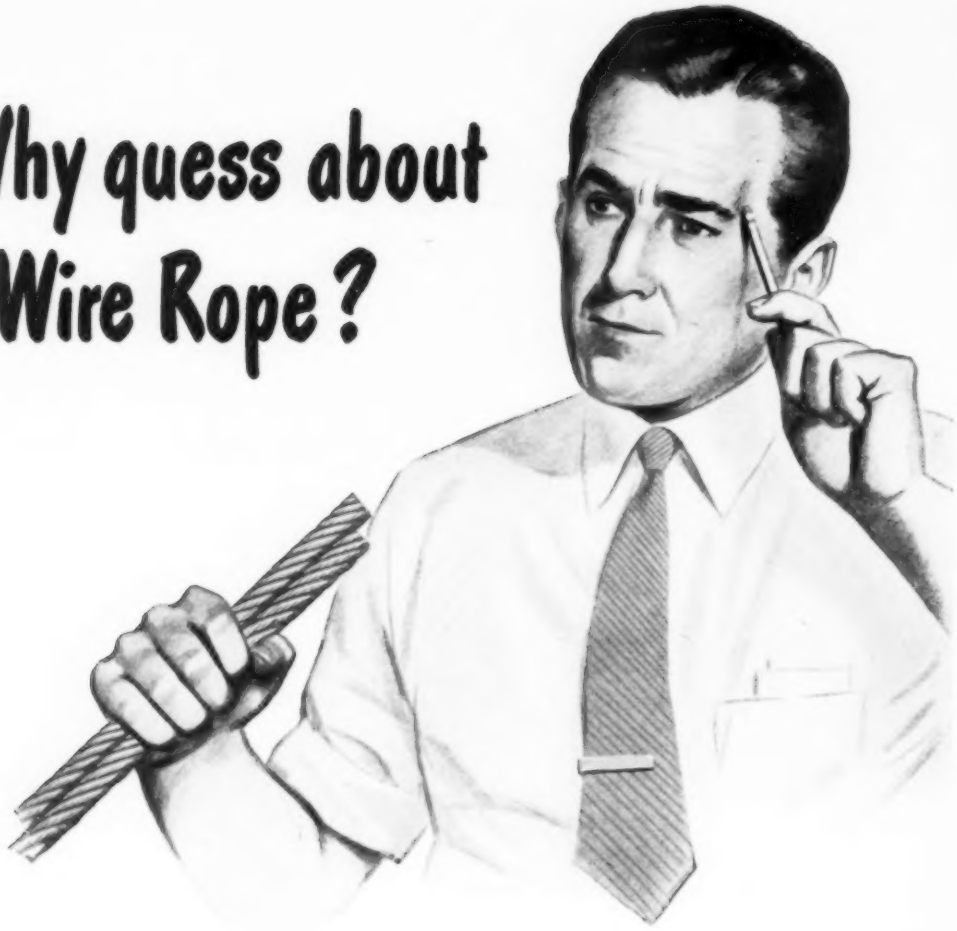
Kue-Ken Balanced Crushers	Rib Cone Ball Mills	Overflow Classifiers
Kue-Ken Simplex Crushers	Concentrating Tables	Feeders
Kue-Ken Gyratory Crushers	Overhead Eccentric Crushers	Screenwheel Classifiers



Pit and Quarry


WORK CAPACITY"
Before you buy
SEE YOUR KOEHRING DISTRIBUTOR
there's a BIG difference
KOEHRING COMPANY
Milwaukee 16, Wisconsin
Subsidiaries: JOHNSON • PARSONS • KWIK-MIX

Why guess about Wire Rope?



Let's call this a picture of a man who used to guess about his wire rope. He often guessed wrong. Was never really sure which brand was costing him the most—and the least.

Now he's keeping records. A Bethlehem man showed him the value of knowing what he was actually getting for his rope dollar. Showed him that the true cost of wire rope is the cost per unit of work—per ton-mile, cubic yard of rock moved, etc. Showed him how easily records could help him determine this cost per unit of work.

It's something Bethlehem strongly recommends, for purchase price alone is a false yardstick of rope value and rope economy. Frankly, we welcome any steps that will help users compare brands of rope, for the Bethlehem product is built to give outstanding service at very low cost. This is a fact you can prove to your own satisfaction by keeping a few simple records.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

LET YOUR RECORDS TELL YOU!

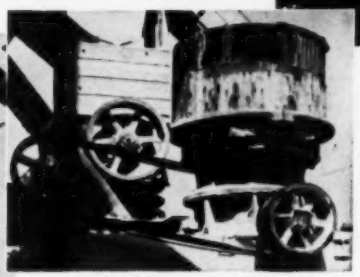
CRUSHING 500,000 TONS for Pennsylvania Turnpike

Eastern Extension

TELSMITH

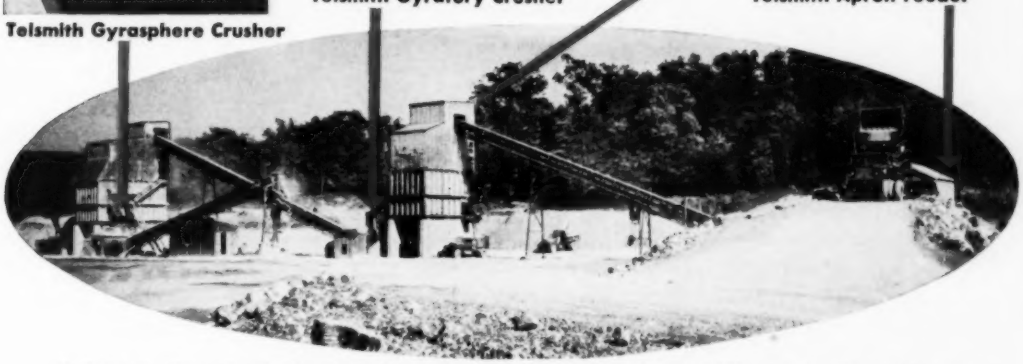
Telsmith Scalping Screen

Telsmith Gyrasphere Crusher



Telsmith Jaw Crusher
Telsmith Gyratory Crusher

Telsmith Jaw Crusher
Telsmith Apron Feeder



Building the Pennsylvania Turnpike Eastern Extension brought an abnormally large demand for aggregate in Lebannon and Lancaster Counties. Pennsylvania Aggregates, Inc., built this completely new, Telsmith crushing plant at Cornwall to supply part of this temporary demand—about 500,000 tons in 15 months' time. Typically Telsmith, plant operation is smooth; up-keep is low; and production high—200-250 tons hourly, making a maximum of minus 2¼" in four different sizes.

TELSMITH Equipment in This Plant

42" x 14' Heavy-Duty Apron Feeder • 30" x 42" Roller Bearing Jaw Crusher • 30" x 150' Primary Conveyor • 5' x 12' 2-Deck Heavy-Duty Scalping Screen • 10" x 36" Roller Bearing Jaw Crusher • 13B Gyratory Crusher • 30" x 149' Conveyor • 5' x 12' 3-Deck Vibro-King Sizing Screen • No. 36 Fine Crushing Gyrasphere Crusher • 24" x 83" Return Conveyor.

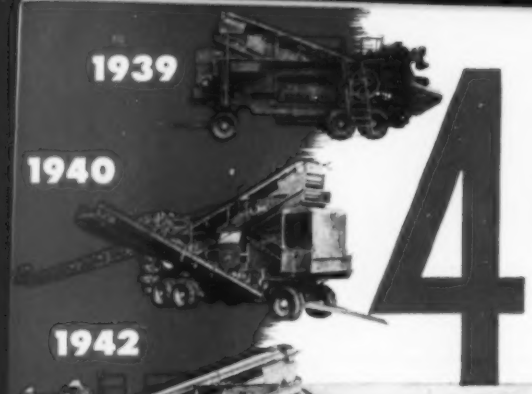
Get Bulletin 266—Telsmith Complete Plant Service.

Q-22

SMITH ENGINEERING WORKS, 504 E. CAPITOL DRIVE, MILWAUKEE 12, WISCONSIN

Cable Address: Smgworks, Milwaukee

51 East 42nd St., New York 17, N.Y. • 211 W. Wacker Drive, Chicago 6, Ill. • 713 Commercial Trust Bldg., Philadelphia 2, Pa. • 238 Main Street, Cambridge 42, Mass. • Boebek Eqpt. Co., Milwaukee 7, Wis. • A. N. Wiglo, 362 S. Ashburton Rd., Columbus 13, Ohio • Clyde Equipment Co., Portland 9, Ore., & Seattle 4, Wash. • Minas Eng. & Eqpt. Co., San Francisco 4, Calif. • Interstate Equipment Co., Statesville, N. C. • Rich Eqpt. Co., Charleston 27, & Clarksburg, W. Va. —Roanoke 7, & Richmond 10, Va. • Wilson-Wessner-Wilkinson Co., Knoxville 8, & Nashville 6, Tenn.



4 Austin-Western CRUSHING PLANTS

for Arthur & Allen of Pueblo, Colorado

Crushing slag from the Colorado Fuel & Iron Company's Pueblo plant to produce ballast for the Santa Fe, Missouri Pacific and Rock Island Railroads.

The man at the feed conveyor in the foreground is salvaging iron from the slag.

This, the fourth Austin-Western Crushing and Screening Plant purchased by Arthur & Allen over a ten-year period, has an average run of 350 tons per hour and has reached a peak output of 420 tons per hour. The finished product is, in almost all cases, 1½" minus to ⅜" plus. The percentage of crush is approximately 60.

Whatever your production requirements, an Austin-Western Plant, designed and tailor-made to meet them, will do the same sort of outstanding job for you. Let's talk it over.

AUSTIN-WESTERN COMPANY, AURORA, ILLINOIS, U.S.A.

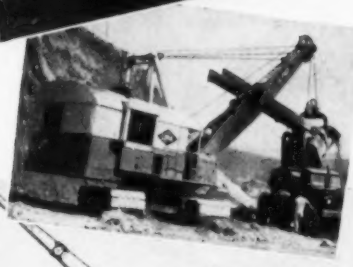
These conveyors are carrying the combined output of jaw and roll crushers.

The loading hopper is arranged to accommodate two trucks at one time.

BUILDERS OF ROAD MACHINERY

Austin Western

SINCE 1859



Need a new Shovel? Crane? Dragline? Pull Shovel?

IT WILL PAY YOU TO CONSIDER

LIMA

Here's why

LIMA MACHINES are designed and built for hard usage. All components are engineered for long-life, trouble-free service, maximum production and operator convenience.

LIMA FEATURES—Anti-friction bearings at all vital bearing points, independent boom hoist, extra sturdy, heavy crawler base and rotating base, rugged, large diameter clutches and brakes, maximum weight behind center of rotation, LIMA Precision Air Control on all except the ¾ yard size—these are a few of the features contributing to outstanding, continuous performance.

THE LIMA LINE—includes a complete range of shovels from ¾ to 6 yards, cranes to 110 tons, draglines, variable. Crawler, truck and wheel-mounted types are available. Most types are quickly and easily converted from shovel to crane or dragline, and vice versa.

LIMA SERVICE is based on our sincere policy of being as interested in the continuous satisfactory service of LIMA machines as you are. Our regional offices and many distributors stock LIMA parts. Orders for maintenance parts get first priority at the factory.

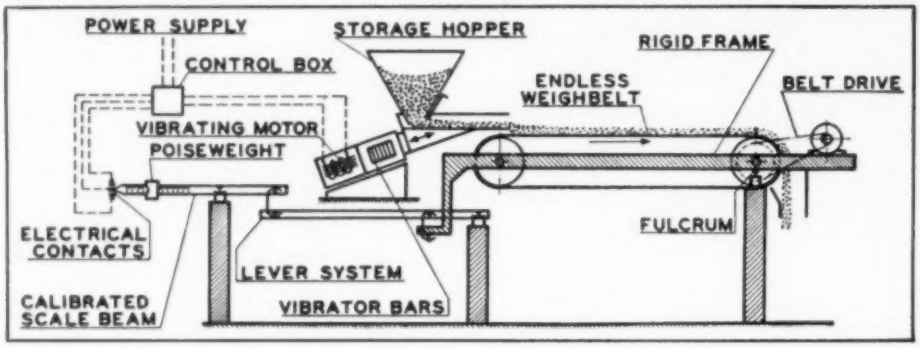
LIMA REPRESENTATIVES are seasoned shovel men, qualified to help you select exactly the right equipment for your needs. A letter or 'phone call will put them to work on your problem.

So, we say, consider LIMA. It costs nothing to get the facts.

Offices are located in the principal cities of the U. S. and the world. If you do not know the representative nearest you, write us and we'll tell you where to reach him.

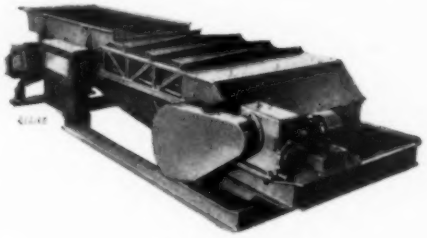
Lima Shovel and Crane Division
Baldwin - Lima - Hamilton Corporation
Lima, Ohio, U. S. A.

CONTINUOUS GRAVIMETRIC FEEDING ACCURATE FLEXIBLE



(PATENTED)

For accurate weighing, feeding, batching and proportioning there is this Jeffrey-Traylor WAYTROL — a precision machine with rate of delivery automatically regulated. Control is electrical and instantaneous. Compensating for error, the WAYTROL provides a system of continuous weighing, following exactly the theory of precision of measurement upon which it is based. Let us tell you more about this unit with the "Electric Brain."



TYPE 450 WAYTROL

Partial List of Materials being fed by WAYTROLS

Activated Carbon	Coal	Iron Borings	Sand
Alum	Coke	Iron Ore	Shale
Ammonium Sulphate	Explosives	Limestone (crushed)	Soda Ash
Bauxite	Feldspar	Limestone (pulverized)	Starch
Borax	Fluorspar	Pebble Lime	Talc
Cement Clinker	Food Products	Plastics	Tobacco
Cement (finished)	Fullers Earth	Potash	Wood Chips
Chemicals	Gypsum	Salt Cake	Wood Flour
Clay	Glass Cullet		Zinc Ore
	Hydrated Lime		

SIZES AND CAPACITIES

Type	Capacity per hour (based on 100 lb. Granular Material)		Feeder HP	Shipping Weight Lbs.
	Minimum	Maximum		
116	60 lbs.	6,000 lbs.	1/16	1,050
220 AC	300 lbs.	15,000 lbs.	¼	1,800
220 MC	300 lbs.	30,000 lbs.	⅓	1,900
330	1000 lbs.	100,000 lbs.	1	3,800
450	2000 lbs.	200,000 lbs.	1	6,000
5080	5000 lbs.	500,000 lbs.	2	12,000

ELECTRIC VIBRATING } Feeders Coolers Conveyors Packers Bin Valves Screens Dryers Waytrols Bin-Level Controls Mixers

THE JEFFREY MANUFACTURING COMPANY Established 1877

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Complete Line of Material Handling, Processing and Mining Equipment

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Jeffrey Mfg. Co., Ltd., Montreal, Canada
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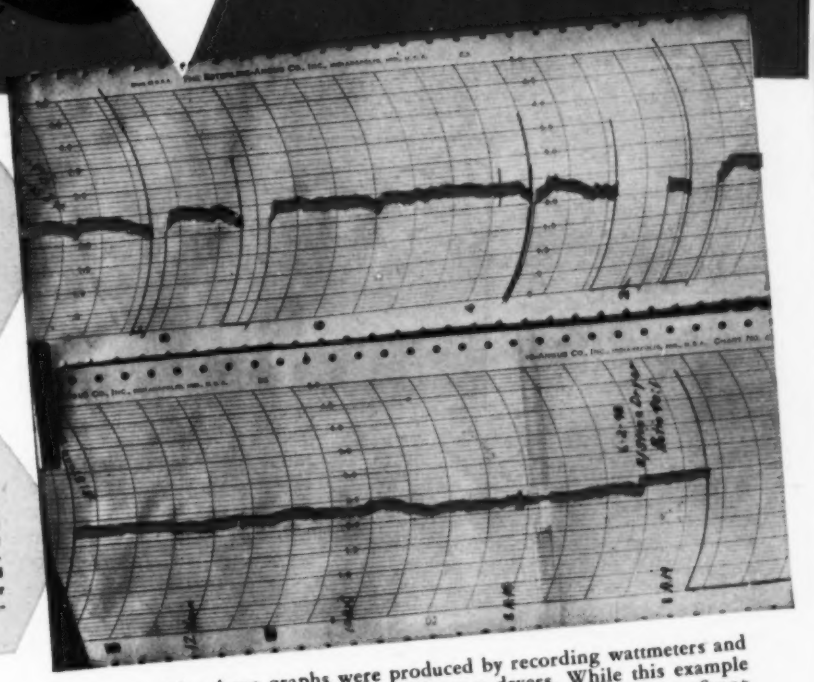
British Jeffrey-Diamond Ltd., Wakefield, England
The Galion Iron Works & Mfg. Co., Galion, Ohio
The Kilbourne & Jacobs Mfg. Co., Columbus, Ohio

Compare THESE GRAPHS !

...see how GEARS ENGINEERED BY Stroh INSURE CONTINUOUS, ECONOMICAL SMOOTH FLOW OF POWER



This graph shows the costly, intermittent operation of the #2 Stone Dryer in a modern cement plant, resulting from the unsatisfactory performance of Standard 14½° Involute Cast Tooth Gearing. Are you getting this type of service from your gears?

The gears on the #1 Stone Dryer in the same plant are of Stroh Steel 20° Involute Long and Short Addendum Cast Tooth. Note the continuity of operation and smooth flow of power these gears make possible.

The above graphs were produced by recording wattmeters and show the power input on the two dryers. While this example illustrates the superior performance of Stroh gears on Stone Dryers, they are equally as efficient on kilns—coolers—tube, rod, ball mills and all similar applications.

The smoother flow of power on the #1 Dryer resulted from the use of *Stroh Steel 20° Involute Long and Short Addendum Cast Tooth Gearing.*

Wear-resistant Stroh Alloy on the active contour of the gear teeth maintains their original contour and insures continuity of a smooth flow of power.

On receipt of your inquiry, we will gladly supply further data on your specific problem without obligation. Write today.

Stroh PROCESS STEEL CO.

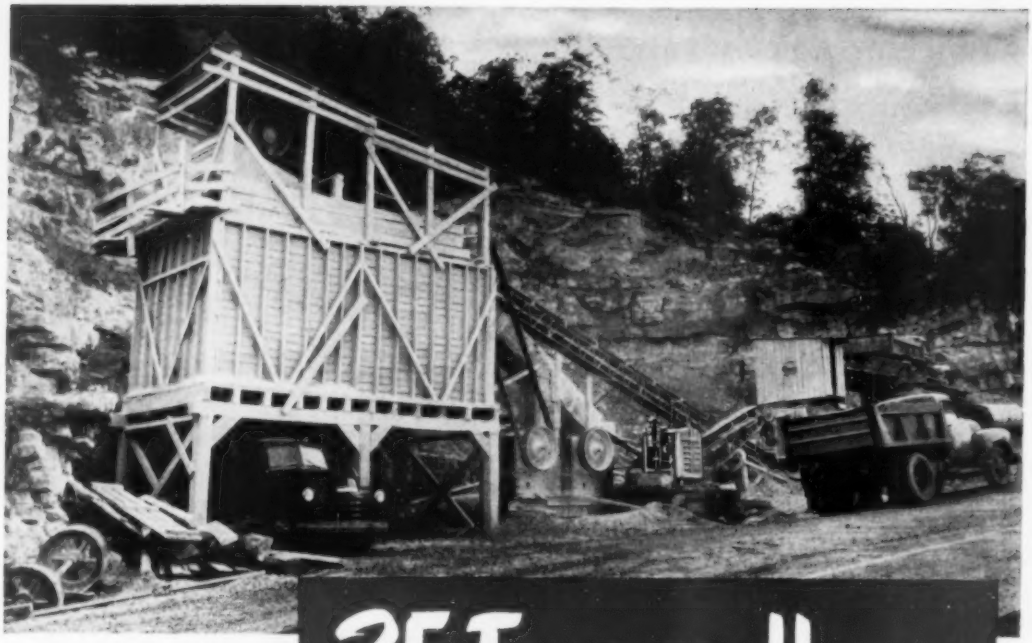
Established 1916

PITTSBURGH 12, PENNA., U. S. A.

WALLACE YOUNG, South American Representative

Manufacturers of STROH ALLOY CAST TOOTH GEARS

CAST IRON AND NORMAL CARBON STEEL GEARS



A 4-71 GM Diesel engine drives two 10" x 20" crushers, 70' x 24" conveyor and 3' x 10' double deck screen. This plant has enabled Sequatchie County—one of the smallest in Tennessee—to have one of the best county road systems in the state.

35 Tons an Hour

-fuel cost 1-⅔¢ per Ton

WHEN a GM 4-cylinder Diesel replaced another make engine on this rock crushing plant operated by Sequatchie County, Tennessee, the surplus power enabled Road Superintendent Chester Allen to add a *second* crusher.

In this unique installation, with one engine driving the entire plant, production has doubled to 35 tons per hour. Fuel cost is less than 1⅔ cents per ton produced. No repairs in over a year of operation.

Reasons for this superior performance are clear. GM Diesel engines are 2-cycle—with power on every downstroke. They deliver a smooth, steady power output—twice as many power impulses for each revolution of the crankshaft. This makes GM Diesels far more powerful than other Diesels of comparable size. These engines start quickly on their own fuel, accelerate faster and keep running with little attention.

For dependable, low-cost Diesel power, get the facts on these husky, hard-working 2-cycle Diesels. They are offered as standard or optional equipment in over 500 kinds of power machinery by 120 different manufacturers. They are available for replacement installations through your nearby GM Diesel distributor.

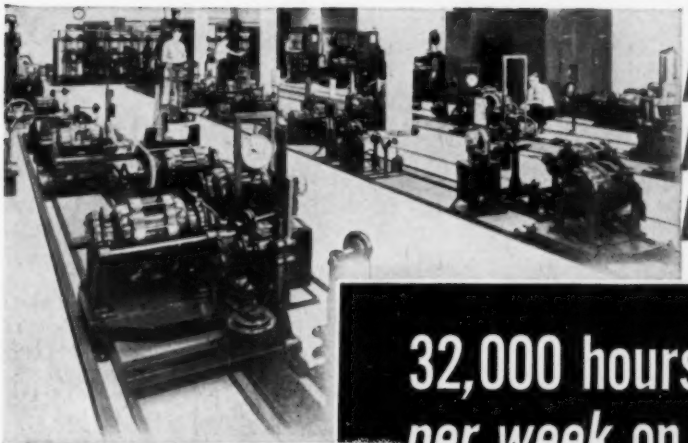
DETROIT DIESEL ENGINE DIVISION

SINGLE ENGINES... *Up to 275 H. P.* **DETROIT 28, MICHIGAN** MULTIPLE UNITS... *Up to 800 H. P.*

GENERAL MOTORS

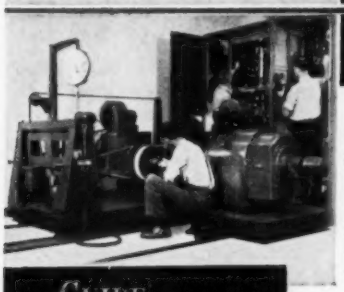
GM GENERAL MOTORS DIESEL POWER

DIESEL BRAWN WITHOUT THE BULK



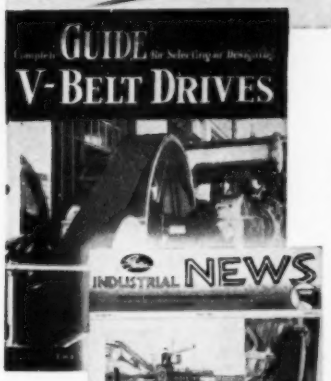
In the GATES Research Laboratories...

32,000 hours of testing *per week* on V-Belts alone!



In Gates V-Belt testing laboratories, which are by far the largest in the world, we run *32,000 hours of testing per week* on V-Belts alone. Thats' the equivalent of *5 years of continuous service* for one belt—*all in a single week!*

This intensely *Specialized* Research on V-Belts has naturally given Gates Engineers a knowledge of V-Belts and V-Belt drive design that is truly unusual—and it is this specialized knowledge that is embodied in the Gates "GUIDE for SELECTING or DESIGNING V-BELT DRIVES."



Take Advantage of this Great Store of V-Belt Knowledge—FREE!

The GUIDE is widely recognized as the most comprehensive and complete book of its kind—as well as the *easiest to use*—and it is *yours for the asking!*

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DENVER, U.S.A.

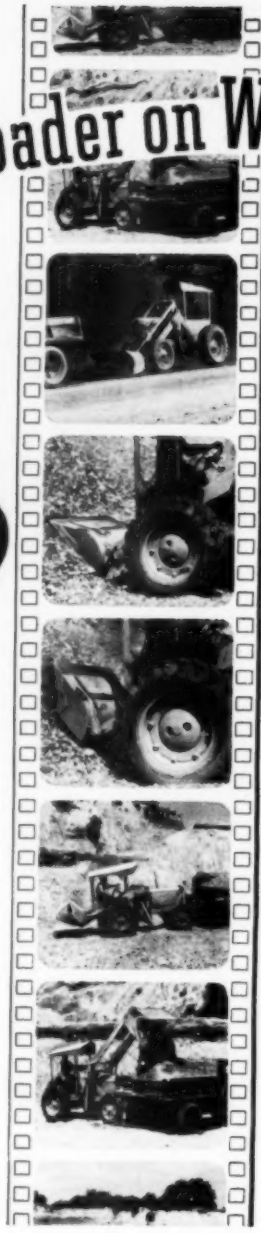
Now... the Most Versatile Loader on Wheels!

Here's the most versatile, practical loader ever developed for wheel tractors. It can dig in front . . . dump in front like the conventional loader. BUT, it can also dig in *back* and load in *front.*

You can dig in back . . . move straight forward to the truck . . . the bucket swings *straight over* the roof . . . and the load is dumped into the truck. Thus you eliminate the turning necessary with ordinary front end loaders . . . eliminate *half* the gear shifts and *half* the clutch wear. You save time and fuel . . . cut operator fatigue. You speed loader operations . . . *can load at better than a yard a minute.*

You get far greater traction and almost effortless steering with the Strait-Line. Rear-carried bucket load adds needed weight to the rear driving wheels . . . subtracts weight from the front steering wheels. Increased traction plus the new PUSH-TILT bucket with extended loading lips, enables you to get bigger bucket loads. Two levers control all operations.

Add them all up . . . ability to select your type of digging, front or back as the job requires . . . Strait-Line operation with back digging which gives you faster operation, greater traction and easy steering . . . fuller buckets . . . and you'll see where your operations can profit with the Strait-Line. For information and literature, see your Oliver Industrial Distributor or write direct to The OLIVER Corporation, 19300 Euclid Avenue, Cleveland 17, Ohio.



Conventional front digging, primarily used with Strait-Line where unit digs and moves straight ahead to load.

Back digging. Note how extended loading lips easily penetrate the bank.

PUSH-TILT action which lifts cutting edge 20" and thrusts it into bank.

Carrying position—bucket is tilted to retain load and is carried low enough to increase both traction and stability.

Dumping position. Bucket has been carried over the roof and dumps in front.

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A complete line of industrial wheel and crawler tractors

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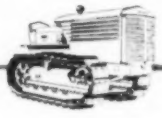
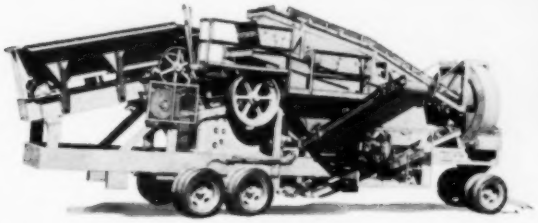
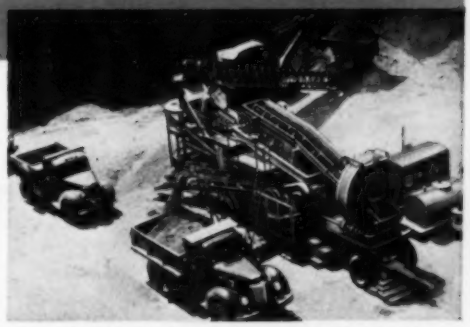


The Sign of Extra Service

4 TOP PRODUCERS THAT INVITE COMPARISON





1 TwinDual Pacemaker Rock Plant

2 TwinDual Gravel King—three stages of crushing, two screens for pits with large boulders

3 TwinDual Master Gravel Plant—double the output of conventional two-stage plants of comparable size and weight

4 TwinDual Secondary with 546P Primary. High capacity with two portable units for quarry operation

UNIVERSAL'S TWINDUAL PLANTS FOR ROCK AND GRAVEL

Out in front! Universal TwinDual Plants are breaking production records and cutting costs per ton on finished aggregate.

Universal "Stream-Flo" engineering does it with the TwinDual Method—the modern system of crushing and screening that gives three full stages of reduction with only two crushers. You get more production, less jaw and roll shell wear, longer life, less maintenance.

Before you make an investment in a crushing, screening and loading plant for rock or gravel investigate the profitable bonus you get with a TwinDual installation. Compare TwinDual Plants with the field. Get the facts now.

How many crushers do you need for 3 full stages of reduction?

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First Stage—Jaw Crusher
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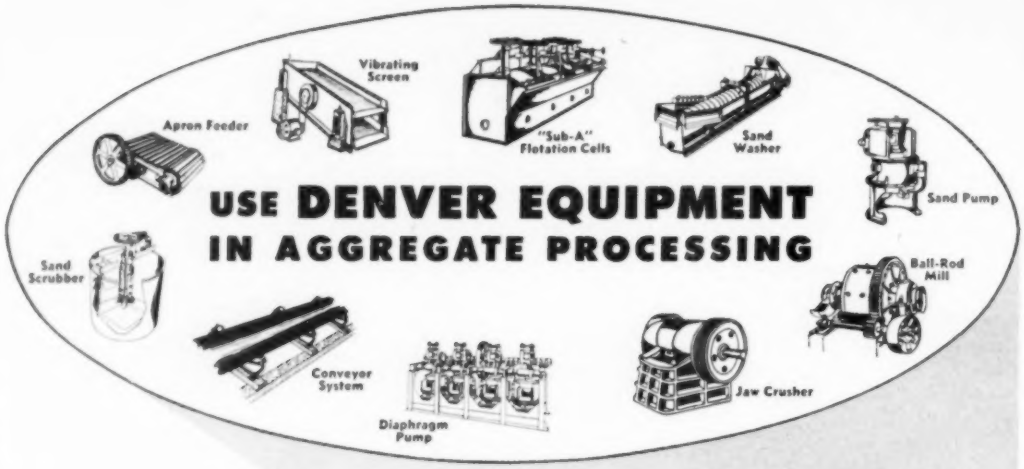
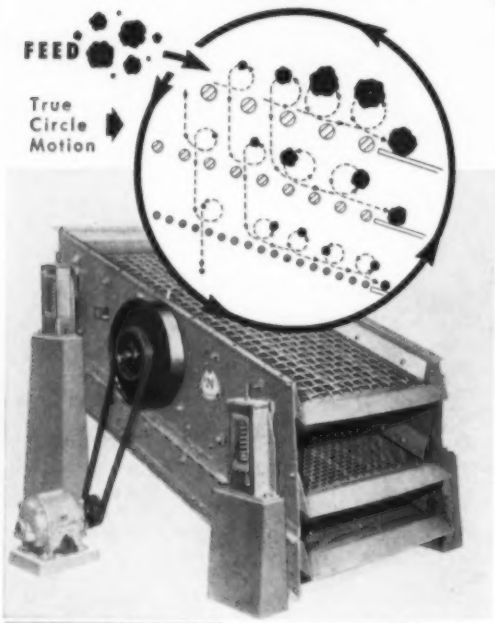


less fines in classified aggregate by using the

DENVER · DILLON Vibrating Screens



Better Cleaning . . . Less Penalty . . . More Profit. Material literally comes straight down hundreds of times over the complete area of the fully activated screen so that every particle of undersize passes through the screen. Result is a minimum of undersize in every sized product.

Circle Throw Eccentric More than Vibrates the Screen. The true circle motion lifts each particle up, back and directly down onto the screen cloth. Material more than flows across the screen . . . hundreds of times it moves up, back and down so that every particle of undersize passes through.

Result . . . a cleaner product . . . less penalty . . . more profit.

With the Denver Dillon Screen *you also get . . . Two Bearing Suspension . . . Fifty Percent Less Horsepower Consumption . . . Minimum Maintenance . . . No Blinding of Screen Cloth . . . and many other features.*

Want more information on this super screen?

Write today for Bulletin S3-B5, giving us some idea of your screening problem. You will receive a prompt reply and a solution.

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Here's the *modern way* to drill plug and feather holes

FASTER, EASIER and at LOWER COST

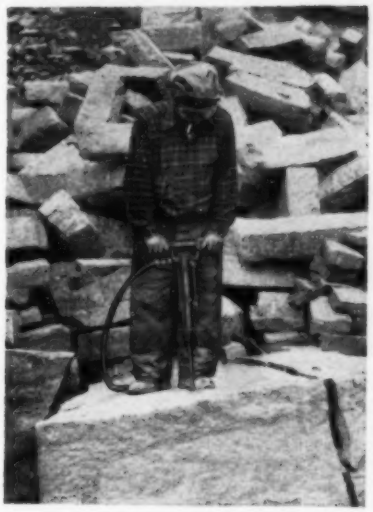
It's the

Ingersoll-Rand

J-10 JACKHAMER

with the

CARSET DRILLING STEEL



- drills up to 1200 holes with one Carset steel
- has automatic rotation
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- has automatic hole cleaning
- is light in weight
- is a two-handed, easy-to-hold powerhouse

THE J-10 JACKHAMER and the Carset drilling steel give plug and feather drillers a really *modern* tool for an operation that is hundreds of years old. The J-10 is a compact, air-powered automatically rotated rock drill that can outdrill two or three conventional, hand-rotated pluggers. With it, *both hands* of the operator are free to hold the cushioned, T-Type handle—working in a comfortable and natural position.

This T-Type handle is also available with single-grip, under-handle throttle valve.

THE NEW CARSET DRILLING STEEL with Carboloy inserts, is designed especially for this type of work. Like the famous Ingersoll-Rand Carset Jackbit, it stays sharp for hundreds of holes, retains its gauge, and requires only infrequent touching up on a silicon carbide wheel. Its sharp cutting edges increase drilling speed, make the drill easier to hold, and reduce wear and tear on both drill and operator.

Your nearest Ingersoll-Rand office will be glad to give you full information.

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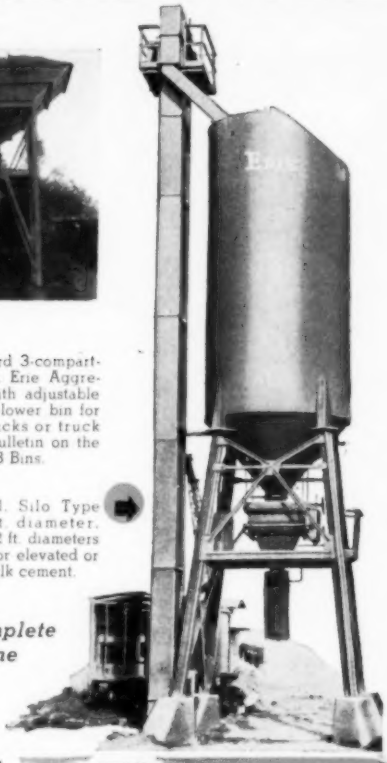
SEE *what* ERIE *offers for* CONCRETE *projects*

THE Erie Portable Concrete Plant at the left has produded 3275 cu. yds. of air entrained concrete for tunnel and spillway at the Burr Oak Dam sight. This plant features 20 cu. yd., 3 compartment bin loaded by integral 60 T. P. H. bucket elevator with materials batched thru hydraulically controlled 3 beam AggreMeter with 4th beam for water weighing. One man operates all controls, a helper feeds bag cement. Takes about an hour to set up this plant and less to knock down for moving to next job.

Erie Portable Concrete Plant made 3275 cu. yds. of concrete at Burr Oak Dam in Ohio.

Erie 3 yard Wet and Dry batch Concrete Plant includes Type CTB 160 cu. yds. 3-compartment AggreMeter Plant connected to Erie M-3 492 bbl. single compartment Cement Bin loaded by undertrack hopper to vertical 50 T. P. H. bucket elevator. Produces up to 500 yards of concrete per day.

Erie G. T. B. 79 yard 3-compartment bin with 3 yd. Erie AggreMeter. Equipped with adjustable columns to raise or lower bin for charging batch trucks or truck mixers. Write for bulletin on the complete line of GTB Bins.



Erie CSB 592 bbl. Silo Type Cement Bin, 11 ft. diameter. Available in 11 & 12 ft. diameters in many capacities for elevated or ground storage of bulk cement.

Write for Booklet 2L-2 for complete data on the line of Erie 2-line Contractor Buckets.

ERIE

STEEL CONSTRUCTION COMPANY

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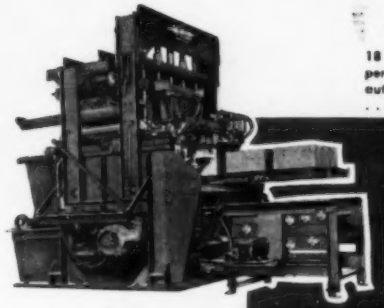
January 1951

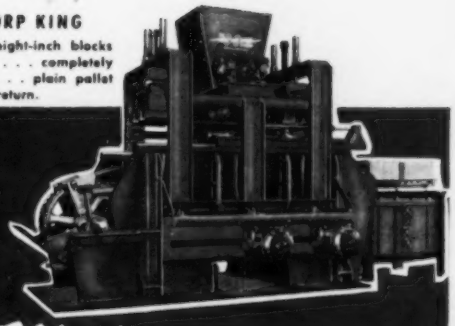
THE CONCRETE MANUFACTURER

A SPECIAL SECTION OF PIT AND QUARRY



GOCORP KING

18 to 24 eight-inch blocks per minute . . . completely automatic . . . plain pallet . . . pallet return.



GOCORP SENIOR

12 or more eight-inch blocks per minute . . . same features as the King.

Modern . . .

Proven . . .

Accepted!

GOCORP JUNIOR

3 to 8 eight-inch blocks per minute . . . low price . . . cored pallet . . . vibrator machine.

- Designed by men who pioneered the major improvements of the past.
- Built, sold and backed by men you have known for years.
- Production-tested in old established plants by practical, profit-minded operators who have purchased the machines.
- Have established new higher standards for controlled quality at lower cost.
- Basic new principles of design mark the beginning of another era, as did the development of vibration 13 years ago.

GOCORP AND SUPREMIX

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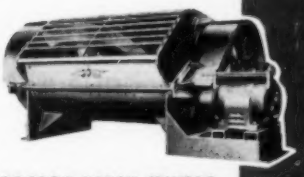

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Equipped with Gohard Sectional Liners and Blades . . . 5 standard sizes.

THE GO CORP.

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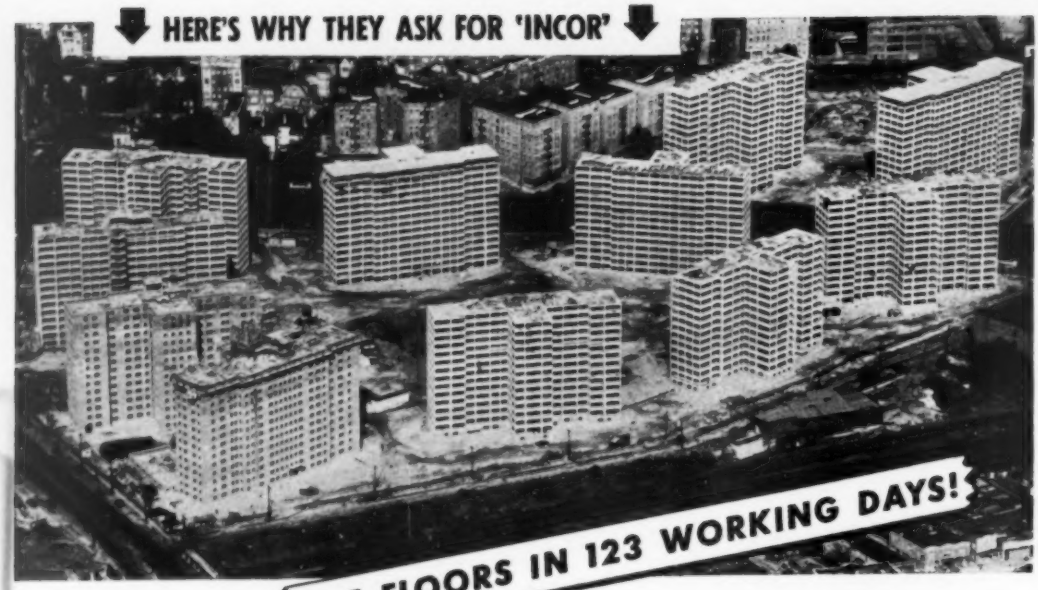

Vertical Assembly-Line Methods Mark Major Advance in Concreting Technique

● Mass production efficiency of the industrial assembly line has its counterpart in construction. Marble Hill Houses, latest in New York City Housing Authority's great project-a-month program, shows this principle at its finest and best—a vertical assembly-line spiralling 14 stories skyward.

Marble Hill consists of 11 identical 14-story buildings, 1,400,000 sq. ft. floor area. With 11 form sets, each used 14 times, CORBETTA CONSTRUCTION CO., INC. erected up to two stories per working day—*165 floors in 123 working days, averaging 1⅓ floors per working day.*

Time saved, four weeks per building, through sound planning and construction know-how, aided by always-dependable performance of 'Incor'* 24-Hour Cement . . . performance which explains why so many leading Ready-Mix operators make 'Incor' concrete available as part of their good service. *Reg. U.S. Pat. Off.

Architect: **JOHN AMBROSE THOMPSON,** New York
Structural Engineer: **TUCKER & EIPEL,** New York
General Contractor for Superstructures: **CAULDWELL-WINGATE CO.,** New York
Concrete Construction by: **CORBETTA CONSTRUCTION CO., INC.,** New York
Ready-Mix 'Incor' Concrete: **COLONIAL SAND & STONE CO., INC.,** New York

LONE STAR PORTLAND CEMENT
'INCOR' HIGH EARLY STRENGTH PORTLAND CEMENT
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LONE STAR AIR ENTRAINING PORTLAND CEMENT
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LONE STAR CEMENTS COVER THE ENTIRE CONSTRUCTION FIELD

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LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 15 MODERN MILLS, 27,500,000 BARRELS ANNUAL CAPACITY

NEWS OF CONCRETE MANUFACTURERS

Annual Winter Meeting Of Wash. Products Men Held at Seattle

Seattle, Wash., was the scene of the annual winter meeting held by the Concrete Products Association of Washington on December 16. The sessions were held, appropriately enough, in the A.G.C. Lounge of the Arctic Building.

Among the addresses presented were talks on plant safety problems, masonry dimensional change studies, and irrigation pipe studies. Officers of the association are as follows: president, H. C. Lutes, Lavrite Concrete Products, Spokane; vice-president, Talbot Campbell, Seattle Concrete Pipe Company, Seattle; secretary, R. W. Condon, Graystone Concrete Products Company, Seattle; and treasurer, B. E. Harrison, Harrison Pipe Company, Tacoma. Chairman of the winter meeting committee was Talbot Campbell.

Wabash Valley R.M.C. Assn. Holds School for Operators

The Wabash Valley Ready-Mixed Concrete Association held its annual school for operators at the Rose Polytechnic Institute in Terre Haute, Ind., on December 27 and 28. The program for the meeting was arranged by R. E. Hutchins, association secretary.

According to J. H. Rudolph, president of the association, the group's next annual convention will be held on March 19 and 20 at the Drake Hotel in Chicago.

Howard F. Peckworth Named A.S.C.E. Vice-President

Howard F. Peckworth, director of the American Concrete Pipe Association, was named first vice-president of the Illinois Section, American Society of Civil Engineers at the annual meeting of the organization.

Mr. Peckworth was also appointed general chairman of the convocation committee to plan for the centennial of engineering. A celebration of the hundredth anniversary of engineering will be held in Chicago in 1952.

N.E. Concrete Pipe Association Entertains Highway Dept.

On November 15 the Northeastern Concrete Pipe Association held a meeting in Albany, N. Y., which was attended by its members and by representatives of the New York State Highway Department.

Speaking for the association, Bill Haley explained in detail the findings of Dr. L. G. Straub's report, *Hydraulic Tests on Corrugated Metal Culvert Pipes*. A luncheon was given, with the highway department men as guests. Later there was a discussion of the hydraulic characteristics of concrete pipe.

During the meeting of the association which followed, members considered more effective ways of promoting concrete pipe in the New York State Department of Public Works.

Growing Washington Firm Adds Central Mix Plant

Expansion of business at the Associated Sand and Gravel Company's facilities at Everett, Wash., necessitated the installation of a Worthington-Ransome central concrete mixing plant to pour concrete for the firm's fleet of mixer trucks.

Among the advantages resulting from the new setup are increased daily output, delivery expedition, and precision control of concrete batch mixtures, stated company officials.

Coming Events

January 22-25, 1951 — Cleveland. 31st annual meeting and exhibit, National Concrete Masonry Association. Cleveland Auditorium.

February 12-15, 1951 — New Orleans. 21st annual convention, National Ready Mixed Concrete Association. Roosevelt Hotel.

February 20-22, 1951 — San Francisco. 47th annual convention, American Concrete Institute. St. Francis Hotel.

February 28 and March 1, 1951— New York. Second annual convention, American Concrete Pressure Pipe Association. Waldorf-Astoria Hotel.

March 1-3, 1951—New York. 43rd annual convention, American Concrete Pipe Association. Waldorf-Astoria Hotel.

March 19 and 20, 1951—Chicago. Annual convention, Wabash Valley Ready Mixed Concrete Association. Drake Hotel.

March 22-24, 1951—Washington. Annual convention, Autoclave Building Products Association, Statler Hotel.

Natl. Silo Mfrs. Assn. Convenes at Chicago For 38th Annual Meeting

The National Association of Silo Manufacturers held its 38th annual convention at the Palmer House, Chicago, on November 27 and 28. Over 150 members and guests took part in the two-day program, the theme of which was "Awakening America". An excellent panel of speakers, including Major Hamilton Long, Dr. Melchior Palyi, and Ernest Robert Rossè, dealt with such timely topics as *Creeping Kremlinism in America* and *Russia and the Far East*.

Discussion sessions held on the second day of the meeting covered such subjects as grass silage developments, and experience with silo seals and silo unloaders. There was also serious discussion of the probable shortage of raw materials in 1951, and of the possible effects upon the industry of the proposed freeze of prices and wages. Most of the producers present seemed to feel that credit restrictions, material shortages, and other factors will inevitably result in a reduced volume of business in 1951.

Gifford-Hill Pipe Company Installs Second Pipe Machine

Further evidence of the continued expansion program of Gifford-Hill Pipe Company of Dallas, Tex., is indicated by the purchase of their second Martin Model 48 concrete pipe machine in 1950. This most recent machine has been installed in a new yard just opened by Gifford-Hill in Minden, La. The first machine (purchased earlier in 1950) was installed in a Gifford-Hill Yard at Fort Worth, Tex.

The Martin Model 48 is manufactured by Martin Iron Works, Los Angeles, Calif. It makes pipe from 4 to 24 in. inside diameter with a reported production up to two joints per minute.

Local Industries, Farmers Come Through for Youth

Employees of the R. A. Cullinan Construction Company, Tremont, Ill., gave "Operation Foundation" a boost recently when they contributed their time and efforts to pouring the footing for the $100,000 Farm Youth Building at Exposition Gardens in Peoria, Ill. After the footing had been poured and set, 3,000 concrete blocks were laid by representatives of local organized labor groups and farm workers to complete the project.

Another big contribution was made by the McGrath Sand and Gravel Company of Pekin, Ill., which donated 50 tons of sand to be used in the masonry work.

• Registering restrained amusement and genial pleasure, these members of the American Concrete Pipe Association's executive committee posed for the photographer at a recent meeting in Charlotte, N. C.—J. D. Mollendorf, treasurer; J. A. Dunn, past president; E. H. Fox, president; and H. P. Ford, vice-president. Absent from the meeting was H. W. Heath, Lock Joint Pipe Company, East Orange, N. J.

Hultmark Heads Association Of Products Machinery Men

Gathered for a discussion of problems created by the new and rapidly expanding defense program, manufacturers of concrete products plant machinery met on December 1, at the Fort Shelby Hotel in Detroit, and formed a new organization known as The Structural Concrete Machinery Association.

With the present heavy demand for all types of concrete products likely to be greatly accelerated as the new defense program gets further underway, the needs of concrete products concerns for additional machinery and parts to maintain machines already installed make it necessary that everything possible be done to insure an adequate and continuing supply of materials to the machinery manufacturers. To correlate activities in this direction will be the essential purpose of the new association.

The following officers were elected: president, Myron Hultmark, president, Stearns Manufacturing Company, Adrian, Mich.; vice-president, Haakon Paulson, distribution manager, Besser Manufacturing Company, Alpena, Mich.; secretary-treasurer, Daniel Urban, sales engineer, The Kent Machine Company, Cuyahoga Falls, O.

Bernard B. Byrnes, a truck driver for the Maloney Concrete Company of Washington, D. C., was the victim of a freak accident on November 29 at a Bethesda branch plant of the firm. He had been helping in the company's gravel pit for the day when the accident occurred. Although the mishap was not witnessed, it is thought that a conveyor belt slammed the victim against the side of the pit, causing fatal head injuries.

L. G. Switzer Named President of C. M. Assn. Of Southern California

L. Glenn Switzer, Transit Mixed Concrete Company, Pasadena, Calif., was elected president of the Concrete Masonry Manufacturers' Association of Southern California for the year 1951 at a recent meeting of the group in Los Angeles.

Other officers are J. A. Allen, Hollostone Company, North Hollywood, vice-president; and Ira C. Lackey, Curtis-Merrill Concrete Company, Montebello, secretary-treasurer. Directors for 1951 include the following: E. P. Ripley, General Concrete Products Company; Homer C. Shirley, Superior Concrete Block and Building Supply Company; R. F. Higgins, Hazard Concrete Products Company; Wm. L. Dollimore, Ace Brick and Patio Supply Company; Bruce Iliff, Pre-Cast Concrete Products Company; and William H. Kennington, California Brick & Tile Company. Clif Hendrickson continues as secretary-manager.

Vermont Products Concern Closes after Half Century

First "war casualty" among Swanton, Vt., industries was the W. J. Greenough Company, which manufactured concrete blocks and other products.

The first blow suffered by the business came when Weldon and Wayne Burgeois, associates of Mr. Greenough in the firm, were called to active duty in the National Guard in September. A few weeks later Mr. Greenough died after a heart seizure. He had founded the business about 50 years ago.

The Erie Builders Supply Company, Erie, Pa., has opened a new concrete block plant, President Ray McEnery announced. He states that the plant houses the most modern machinery in Northwestern Pennsylvania for the manufacture of concrete blocks.

Myron Hultmark, president.

Haakon Paulson, vice-president.

Daniel Urban, secretary-treasurer.

Roy Darden Industries Exclusive Representative Of Aglite Plants in South

According to an announcement released by R. F. Leftwich, designer of sintering machines and equipment for manufacturing Aglite, a lightweight concrete aggregate, Roy Darden Industries, Inc., of Atlanta, Ga., will be the exclusive representative in the South of Aglite plants and equipment.

Mr. Leftwich designed and supervised the construction of the first Aglite plant, owned and operated by The Marietta Concrete Corporation at Marietta, O., as well as the one operated in Detroit by the Lightweight Aggregate Corporation, headed by Benjamin Wilk, president. The Western Brick Company of Danville, Ill., is now building an Aglite plant under contract with Mr. Leftwich. Western Brick's sintering machine is being manufactured by the Condenser Service & Engineering Company, Hoboken, N. J., at the concern's Scranton, Pa., plant. Condenser Service will continue to build sintering machines for Aglite plants under contract with Mr. Leftwich.

• R. F. Leftwich (left) and Roy Darden.

Mr. Darden has long been identified with the concrete products industry. For a number of years he was associated with John Bailey, pioneer block producer of Atlanta, in the production of lightweight concrete masonry units. Subsequently he began manufacturing concrete block plant equipment, a business which he still maintains. In addition, Mr. Darden holds a long-time contract with the F and A Laboratories of Philadelphia, Pa., as the sole licensing agent for the F and A floor and roof system of concrete joist and filler block construction.

Carl Miller, secretary-treasurer of the Autoclave Building Products Association, has announced that the association will hold its annual convention at the Hotel Statler in Washington D.C. on March 22, 23, and 24. The organization was formerly known as the Sand Lime Brick Association.

At Bloomington, Ill., the ready-mixed concrete plant of the Bloomington Builders Supply Company began operations recently at 1102 W. Market St.

Precision Control Meters Mix for Concrete Tanks

Although in business only a little over four years, the Superior Septic Tank Company of W. 8 Mile Road, in Detroit, Mich., has developed a unique line of merchandise and an equally unique method of producing it.

They manufacture 500-, 750-, and 1,000-gal. all-concrete septic tanks. (J. G. Francis, founder and president of the company, states that to his knowledge they are the only manufacturers of 1,000-gal. pre-cast tanks of this type.)

The method of production, which nets Superior about eighty 500-gal. tanks each week, plus about five of the 750-gal. size and three of the 1,000's, relies heavily on mechanical aids, fork lift trucks, overhead cranes, etc. This results in improved plant efficiency and has held the plant force to four men.

One of the most unusual applications of mechanical handling equipment in the plant is their Barber-Greene belt conveyor, which brings aggregate material from an outside truck hopper into the mixer room. In itself, the conveyor, an 18-in. by 30-ft. long unit, equipped with a 12- by 12-ft. hopper and reciprocating plate feeder, is not unusual. Its method of use, however, is unusual.

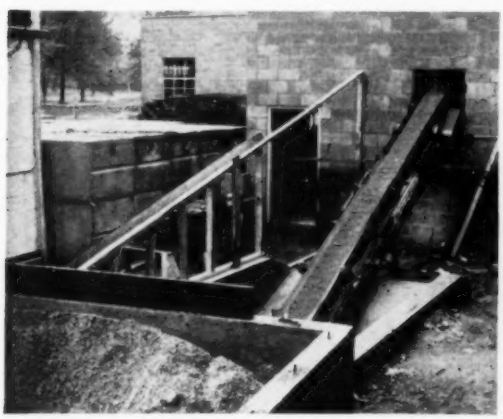
Realizing that the feeder delivered a constant amount of material with each stroke, and that this was, in turn, delivered to the mixer in a continuous, even flow by the conveyor, Mr. Francis and C. B. Gould, Barber-Greene's Detroit representative, equipped the conveyor headshaft with a revolution counter. By a trial-and-error method, they determined the number of revolutions required to discharge 1,000 lbs. of aggregate into the mixer skip. Once this was determined, it was simple to calculate the length of "run" required for smaller or greater amounts.

In addition to the counter, a pre-set, automatic cut-off switch was installed on the conveyor and feeder motor control. Now the desired batch is determined, the switch is set and turned on, and it automatically turns off after the correct amount has been delivered. A swinging spout directs the flow into the skip. It can be swiveled out of the way when the skip is raised.

The aggregate, which is delivered to the plant pre-mixed, consists of a 40-60 percent mixture of sand and pea stone. This is used in a 3.5 to 1 combination with cement to give a 3,800-lb. test strength to the tanks.

This unique conveyor-batcher has not only saved many man-hours of shoveling in "so many shovels of stone—so many bags of cement", but has made the mix consistently uniform and has saved cement on each batch through more accurate proportioning.

The special steel forms which are used to cast the tanks were designed by Mr. Francis' eldest son, Jack, in cooperation with John Benart, plant mechanic. Other key personnel in the Superior organization are Gerald Francis, a younger son, and Alfred Warne, plant foreman.



• Premixed aggregate is delivered by conveyor. A feeder at the base of the hopper keeps material moving on to the belt at an even rate.

• Aggregate is spouted into the mixer skip from the casting room. On the wall is the revolution counter and automatic cutoff.

Convention Program

Cleveland Public Auditorium, Cleveland, O.

National Concrete Masonry Assn. - Jan. 22-25

MONDAY, January 22

8:30 a.m.—Registration all day . . . Lakeside Entrance, Cleveland Public Auditorium
Admission to Convention Sessions open to all representatives of all classes of member companies, exhibitors and invited guests. All must register because admittance to convention sessions and exhibits is by badge only.

10:00 a.m.—Convention opens
Presiding:
Glenn C. Barnes, president
Invocation

10:05 a.m.—President's Address

10:25 a.m.—Report of Treasurer
Carroll Strohm Jr.

10:30 a.m.—Report of Executive Secretary
E. W. Dienhart

10:50 a.m.—Report of Director of Engineering—R. E. Copeland

11:10 a.m.—Report of Director of Promotion—W. P. Marker

11:30 a.m.—Report of Nominating Committee
H. E. Buchholz, chairman

11:35 a.m.—Election of Directors

11:45 a.m.—Local, State and Regional Concrete Masonry Association Activities
C. A. Sirrine, executive secretary
Concrete Products Assn. of Detroit
Robert W. Baldridge, secy.
Concrete Block Assn. of Allegheny County, Pittsburgh.

12:25 p.m.—Discussion by representatives of other concrete masonry associations

1:00 p.m.—Formal opening — Concrete Industries Exposition. Main Arena, Cleveland Public Auditorium. Exposition will be open until 6:00 p.m. No charge for entrance to Exhibit Hall. Visitors must register and receive badges.

3:00 p.m.—Aggregate division meetings
Cinder Aggregate . . . South Meeting Room A
Presiding: Edmund H. Brooke
National Brick & Supply Co., Washington, D. C.
Haydite Aggregate . . . South Meeting Room B (North)
Presiding: Geo. W. Kulhavy
The Carter-Waters Corp., Kansas City, Mo.
Enslite Aggregate . . . South Meeting Room C
Presiding: Walter Cain
Birmingham Slag Co., Birmingham, Ala.

6:00 p.m.—Concrete Industries Exposition closes for the day.

8:30 p.m.—Get-Together Party, Rainbow Room, Hotel Carter
Gentlemen and their women guests are invited by the association to attend good fellowship get-together party.

TUESDAY, January 23

8:30 a.m.—Registration all day. Lakeside Entrance, Cleveland Public Auditorium

10:00 a.m.—Convention opens
Presiding:
Philip Paolella, chairman
Publications and Publicity Committee
25 Years of Observations and Experiences in the Marketing of Concrete Masonry Units in the Detroit Area
Herbert J. Vincent
Cinder Block Inc., Detroit, Mich.

10:20 a.m.—The Visual Aid Program of the Association of Collegiate Schools of Architecture
Professor D. K. Sargent
Syracuse University, Syracuse, N. Y.

10:45 a.m.—2,000 Concrete Masonry Homes Constructed in Two Years—Gustaf Blomberg
Sales Representative
Basalt Rock Co., Inc., Sacramento, Calif.

11:15 a.m.—It is Sound Policy to Maintain A Continuous Merchandising Program Through Good Times and Bad
C. D. Franks
Vice-pres. for promotion
Portland Cement Association, Chicago, Ill.

11:45 a.m.—What Makes Star Salesmen Tick?—W. S. Creen
Lacy Sales Institute, Newton Centre, Mass.

1:00 p.m.—Concrete Industries Exposition opens. Main Arena, Cleveland Public Auditorium. Exposition open till 6.

3:00 p.m.—Aggregate Division Meetings
Celocrete Aggregate . . . South Meeting Room B
Presiding: Jack Austin Crabbs
Austin Crabbs, Incorporated, Davenport, Ia.
Pumice Aggregate . . . South Meeting Room A
Presiding: Jack Edwin Counts
Pumice Aggregate Sales Corp., Albuquerque, N. M.
Superock Aggregate . . . South Meeting Room C
Presiding: John S. Bailey
Concrete Manufacturing Co., Atlanta, Ga.
Waylite Aggregate . . . Club Room B (North)
Presiding: Paul E. Bohm
Concrete Products Corp., Mishawaka, Ind.

6:00 p.m.—Concrete Industries Exposition closes for the day.

7:30 p.m.—Annual banquet . . . Rainbow Room, Hotel Carter
$7.50 per plate. Secure tickets at registration desk.
(Informal)

WEDNESDAY, January 24

8:30 a.m.—Registration all day . . . Lakeside Entrance, Cleveland Public Auditorium

10:00 a.m.—Convention opens
Presiding:
R. A. Utiger, chairman
Technical Problems Committee
(NOTE: A discussion will follow the presentation of each of these subjects.)

10:15 a.m.—Progress in the Manufacture of Lightweight Aggregates by the Sintering Process
Reed W. Hyde, president
Sintering Machinery Corp., Netcong, N. J.

11:00 a.m.—New Developments in Automatic Cement Conveying Equipment—R. A. Hawk
Fuller Company, Catasauqua, Pa.

11:40 a.m.—Determining the Efficiency of Your Plant Operation
Harvey Black
Domine Builders Supply Co. Inc., Rochester, N. Y.

Noon—Some Applications of Reinforced Concrete Masonry
C. J. French, assistant engineer, National Concrete Masonry Association

1:00 p.m.—Concrete Industries Exposition opens. Main Arena, Cleveland Public Auditorium. Exposition open till 6.

THURSDAY, January 25

8:30 a.m.—Registration all day . . . Lakeside Entrance, Cleveland Public Auditorium

10:00 a.m.—Convention opens
Presiding: President-Elect
Present Trends in Pension Plans
I. Austin Kelly III, consultant, New York, N. Y.

10:30 a.m.—Some Experiences in the Field of Labor-Management Relations
Negotiating and Administering a Labor Contract
J. A. Wilder, president
Wilder-Feldmann, Inc., Chicago, Ill.
Utilization of Manpower to Attain Maximum Efficiency in Production
H. A. Feldmann, secretary-treasurer
Wilder-Feldmann, Inc., Chicago, Ill.

11:00 a.m.—The Use of Concrete Masonry Units in Pre-stressed Concrete
Ross H. Bryan
Bryan & Dozier, consulting engineers, Nashville, Tenn.

11:30 a.m.—Some Interesting Results of a Survey of the Concrete Masonry Unit Industry
William M. Avery, senior field editor
PIT & QUARRY, Chicago, Ill.

Noon—Precast Lightweight Insulating Roof Slabs—A. W. Schultz
Zeidler Concrete Products Machinery Co., Clear Lake, Iowa.

1:00 p.m.—Concrete Industries Exposition opens. Main Arena, Cleveland Public Auditorium. Exposition open till 6.

PIT AND QUARRY presents . . .

N.R.M.C.A. Safety Awards

These bronze plaques will be presented by PIT AND QUARRY *to the winners in the 1949-50 National Ready Mixed Concrete Association safety competition at the association's 21st annual convention in New Orleans. The awards are for the 12-month period ended July, 1950, and are made in three classes: Class A, companies producing more than 100,000 cu. yds.; Class B, 50,000 to 100,000; Class C, less than 50,000.*

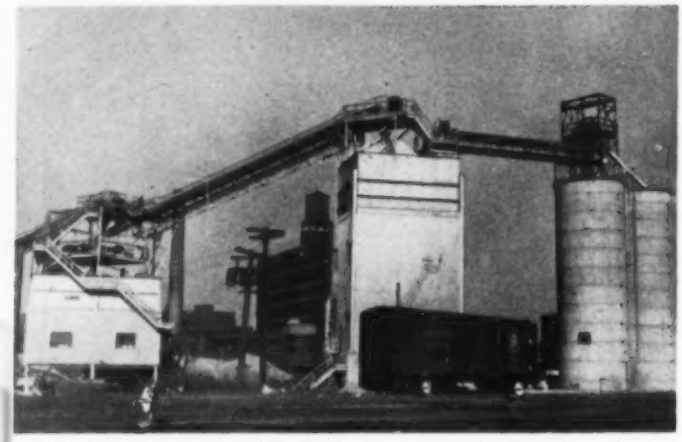
In Class A, the winner was the Fort Worth Sand and Gravel Company, Inc., Fort Worth, Tex., which had a record of no injuries to employees or non-employees during the contest period. The winners in both Class B and C had accident-free records; they were the Kuert Concrete, Inc., South Bend, Ind. (Class B), and the Fyfe Cement and Supply Company, Amarillo, Tex. (Class C).

1951 Concrete Industries Exposition

COMPANY	BOOTH NO.
Adrian Peerless Co.	146
All Concrete Products Co.	35
Allied Chemical & Dye Corp.	159
American Sta-Dri Co.	13
Basalt Rock Co., Inc.	9-10-11
Besser Manufacturing Co.	97-98-99-100-111-112-113-114
Blaw-Knox Co.	125-126-127-160-161-162
Butler Bin Co.	102
Calcium Chloride Association	33
Cedar Rapids Block Co.	42
Celotex Corp.	12
Chain Belt Co.	103-104-105-106-107-108
Cleveland Vibrator Co.	38
Clipper Manufacturing Co.	101
Columbia Machine Works	4-5-6
Commercial Shearing & Stamping Co.	77-78
Concrete Machinery Co.	30-31-32
Concrete Publishing Corp.	43
Concrete Transport Mixer Co.	87-88-89-90
Consolidated Boiler Corp.	47-48
Construction Machinery Co.	81-82-83-84
Cook Bros. Equipment Co.	51-52-53-54
Corflor Engineering Co.	44
Erickson Power Lift Trucks, Inc.	134-153
Fleming Manufacturing Co., Inc.	121-122-123-124
Forney's, Inc.	46
Gardner Machine Co.	8
General Engines Co.	147-148-149
F. C. George Machine Co.	63-64
The Heltzel Steel Form & Iron Co.	57-58
The Jaeger Machine Co.	55-56-79-80
Kent Machine Co.	49-50-85-86
Klingelhofer Machine Tool Co.	163-164
The Knickerbocker Co.	7
Koehring Co.	128-129-130
The Lith-I-Bar Co.	93-94-95-96-115-116-117-118
Maclean-Hunter Publishing Corp.	36
Mason's Twig Sales Co., Inc.	37
The Master Builders Co.	131-132-133
Maxon Construction Co., Inc.	20-21
Medusa Portland Cement Co.	158
Leslie C. Miller Supply, Inc.	16-17-18-19
Mishco Corp.	154-155
Sam Mulkey Co.	156
Multiplex Machinery Corp.	135-136-137-150-151-152
The Gene Olsen Corp.	141-142-143
Oswalt Engineering Service Corp.	166
Pit & Quarry Publications	14
Praschak Machine Co.	39-40-41
The Prime Mover Co.	165
Service Caster & Truck Corp.	71-72
The T. L. Smith Co.	91-92-119-120
Spray-O-Bond Co.	34
Stearns Manufacturing Co.	65-66-67-68-69-70
Supremix, Inc.	144-145
The Towmotor Corp.	109-110
Universal Door Carrier, Inc.	157
Universal Manufacturing Corp.	15
The White Motor Co.	138-139-140
Ransome Machinery Div., Worthington Pump & Machinery Corp.	59-60-75-76
Yale & Towne Mfg. Co.	61-62-73-74
The Yoder Co.	1-2-3

Ultra-Modern Ready-Mix Plant

By WALTER E. TRAUFFER



• A general view of the Material Service Corporation's new plant, with the dry-batching setup (left), the central-mixing plant (center), and the cement storage silos (right).

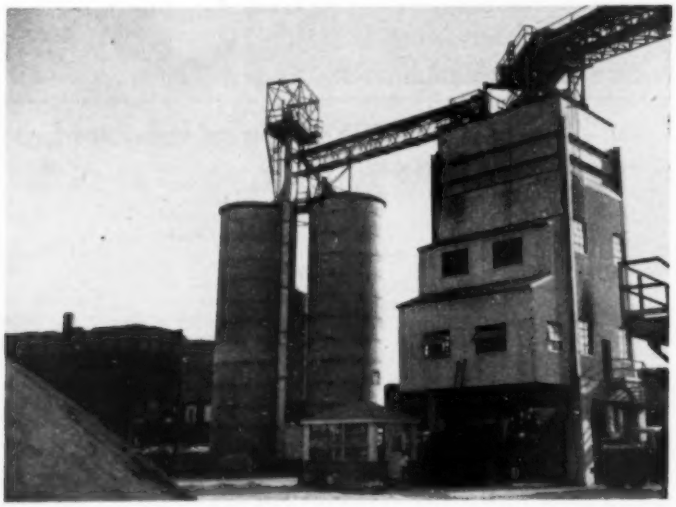
another ON THE SPOT report

JUST a year ago the Material Service Corporation, Chicago, Ill., surprised the construction industry in that city with the announcement that it had begun the commercial production of ready-mix concrete on a large scale and that a $1,000,000 program for the construction of plants to serve that area was under way. The original plan involved the provision of facilities for dry-loading of truck mixers at 7 of the firm's 14 yards in Chicago which handle concrete materials, and the later construction of three large central-mixing plants at the most strategically located of these yards.

The first of these three plants, an ultra-modern operation in every way, went into production recently at Yard No. 1, located at 901 North Sangamon St. at its intersection with Ogden Ave. on the near northwest side of Chicago. It is on the North Branch of the Chicago River and receives its aggregates by water. The other two central-mixing plants will be almost identical with the first. The second one will be completed late in 1950. It is located at Yard No. 9 at 31st St. and California Ave., on the Sanitary Canal in the near southwest section of Chicago. The third plant at Yard No. 10, 93rd St. and Ewing Ave., near the mouth of the Calumet River, is expected to be in operation early in 1951. Two of the dry-loading plants are also located to receive aggregates by water; two others are located adjacent to the company's quarries.

Although this impressive program was based on knowledge of a large latent market, the actual demand has exceeded expectations. Ready-mix concrete has found ready acceptance for all types of work—private, industrial, public utilities, city, county, state, government, etc. In the last two months, however, output has been limited to some extent by shortages of cement, and some of the plants have had to be shut down for short periods. As a result, the potential productive capacity of this central mixing plant and of all 7 plants combined has not yet been approached. The peak day at this plant was 974 cu. yds. That the construction industry in Chicago is still cognizant of the comparative economy of job mixing in many instances, however, is evident from the fact that the volume of bulk and dry-batched aggregates shipped

• This dry-batching plant supplies the large volume of this type of material produced for mixing on the job.



• Another view of the new central mixing plant, with the cement storage silos (left) and the plant office (foreground).

Of Material Service Corporation

from the company's yards still exceeds the volume of ready-mixed concrete.

The new central-mix plant at Yard No. 1 is outstanding in that it incorporates the last word in methods, equipment, and controls in all departments. Automatic controls are applied to every possible operation, from the feeding of aggregates from storage to the discharge of the concrete into agitator trucks. This was done not only to insure the maximum of capacity and economy, but also in order to provide the accuracy necessary for a consistently high-quality product. The use of the Scientific Concrete Service Corporation's $(SC)^2$ system of moisture determination and batching control insures the uniform quality of the concrete produced.

This plant was designed to produce up to 125 cu. yds. of concrete per hour. The aggregate-handling capacity is 350 cu. yds. per hr., and the cement unloading capacity is 500 bbls. per hr. Most of the concrete is being sold on a cement-content basis, but strength and proportion specifications are also met.

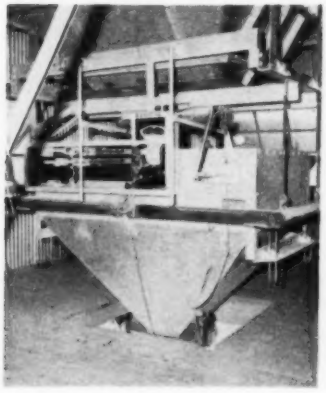
Yard No. 1 receives aggregates by barge from the corporation's producing plants. A crane unloads the sand and gravel into stockpiles over a reclaiming tunnel which is now 234 ft. long. The batching plant which served the truck mixers before the new mixing plant was completed stood at the end of this tunnel. This plant is now being dismantled, and the tunnel will then be extended another 150 ft., which will increase the storage capacity above it to about 30,000 tons.

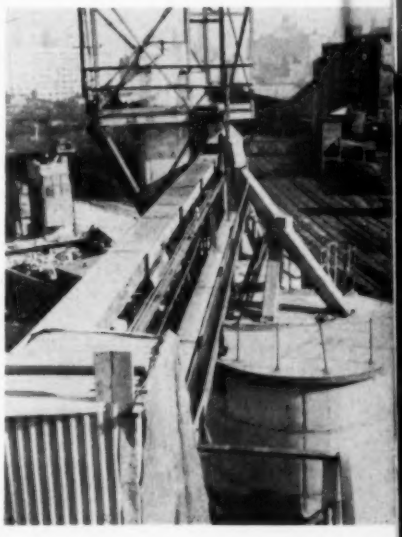
The tunnel is built of Armco corrugated steel sections. Every 12 ft. there is a manually-operated gate so designed that when the tunnel reclaiming belt conveyor is running, the material flows at the desired speed; and when the belt stops, the material is prevented from overflowing. There is a man in this tunnel at all times, and an operator at the top of the mixing plant signals to him by a series of colored lights. The various sizes of materials are stored over different sections of the tunnel, and there are different-colored lights for each section. When one of these lights goes on, the tunnel man opens one or more of the gates in that section as needed to provide a full flow of material. When the light goes out, signifying a full bin, he closes those gates. An inclined conveyor at the end of the tunnel delivers aggregates to the central mixing plant and also, at approximately midway of its flight, to a "cluster" of four bins for serving dry-batch and straight-load deliveries.

The tunnel conveyor (No. 1) is 30-in. wide and at present is 225 ft. long, center to center. It will be extended to 390 ft. when the tunnel is completed. This discharges the material onto a 30-in. by 240-ft. Barber-Greene inclined belt conveyor (No. 2) which raises the material 68 ft. to the top of the "cluster" for dump-truck loading, just mentioned. The aggregates for these bins drop through a spout onto a reversible conveyor on a wheel-mounted framework on a circular track. This conveyor can be moved in an arc of 90 degrees so that it can discharge from each end into all parts of two of the four 200-cu. yd. Butler bins. Under each of the four bins is a 3-cu. yd. Butler batcher with beam scales, from which trucks are loaded.

When aggregates are intended for the central-mixing plant, they are discharged from conveyor No. 2 onto inclined conveyor No. 3 to the top of the mixing plant. This Barber-Greene conveyor is 24-in. wide and 89 ft. long and raises the material 28 ft. By means of a motor-operated revolving spout controlled by the bin man, who is stationed there at all times, the desired materials can be discharged into any of the five aggregate bins over the mixer. The central-mix plant-structure is a large Butler bin comprising five aggregate compartments and three cement compartments. Two of the aggregate compartments hold 75 cu. yds., and three hold 50 cu. yds. each. Ordinarily two sizes

• Reversible revolving conveyor which distributes aggregates into the bins of the dry-batching plant.





• Left: One of the four weigh batchers in the dry-batching plant.

• Right: The elevator and chutes which feed cement into the two storage silos and the screw conveyor which feeds the mixing plant bins.

MATERIAL SERVICE CORPORATION

30 North La Salle St., Chicago 2, Ill.
Phone FRanklin 2-2000

"Everything in Building Materials"

PHONE ORDER DEPARTMENT FRanklin 2-2202

Date 10-18 19 50 Our Order No. 127432R- 75955

Customer's No. Truck MAC 198 Yards One

Sold to Peter Hamlin Trip No. 15

Delivered to LEFT

Address 445 Wellington RETURNED

"LABORATORY APPROVED"
READY-MIXED CONCRETE

8 CU. YD. 5 Bag MIX

DELIVERY IS SUBJECT TO CONDITIONS ON REVERSE SIDE HEREOF

UNLOAD PROMPTLY

FIFTEEN (15) MINUTES ALLOWED FOR UNLOADING TRUCK

ARRIVED JOB (Time) | MATERIAL RECEIVED; TRUCK TIMES AT LEFT ARE CORRECT

TIME DUMPED | Purchaser

Per Agent

DELIVERY RECEIPT

● A sample dray ticket which is a part of the system developed to facilitate accuracy.

of gravel and one grade of concrete sand are stored; but special sizes or types of aggregates can be stored in any of the five compartments. Steam jets over the aggregate storage tunnel and in all bins insure a constant supply of warm aggregates in the coldest weather.

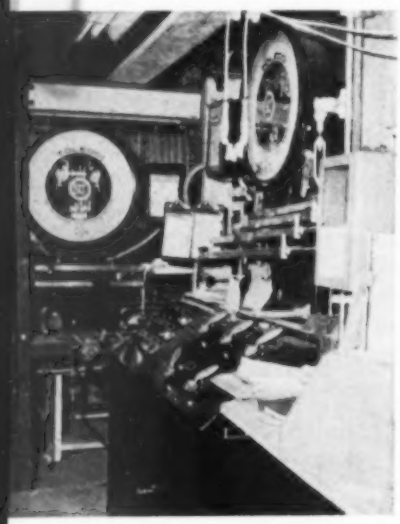
The bulk-cement-handling system is so designed that cement received can be conveyed direct to the mixing plant bins or to the two cement storage silos from which it is later rehandled to the bins. This system has an unloading capacity of 500 bbls. per hr. Bulk cement is used exclusively and this is received in covered - hopper cars and in trucks, both discharging into the same 12-in. by 80-ft. screw conveyor, which discharges to a 78-ft. centers Link-Belt bucket elevator. The latter can either discharge to a 14-in. by 50-ft. horizontal screw conveyor to the mixing plant bins or through a split chute into either of the two 16- by 70-ft., 2,000-bbl. reinforced-concrete cement storage silos. Each silo is partitioned into two 1,000-bbl. vertical compartments. Cement is reclaimed from these silos by gravity into the first screw, which passes between them, and then goes via the elevator and the second screw to the mixing plant bins. A revolving spout, also operated by the bin man, discharges the cement into the three 200-bbl. cement bins which belong to the main Butler bin structure. Bulk fly-ash can also be received and stored, the same as cement. All cement storage silos and bins are aerated to insure free flowing, and the valves controlling the air are located on the batching floor.

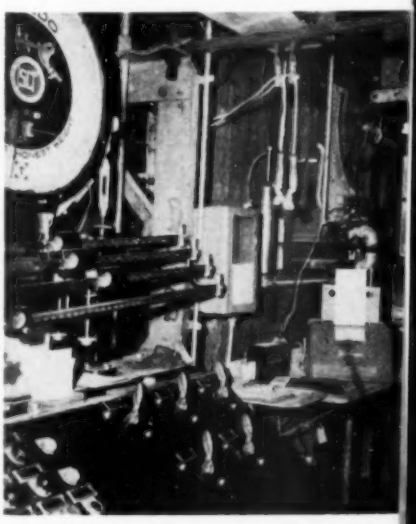
From this point on all operations are under the control of the mixing plant operator. Pushbuttons on a central board control the feed of cement from any of the three bins into the cement-weighing batcher by means of individual rotary valves and short screw conveyors. These screws have two-speed drives and solenoid controls which first slow them down and then stop them at the desired weight.

Aggregates are discharged from the five bins into the aggregate-weighing batcher through clamshell gates operated by solenoid valves controlled by pushbuttons. These are one-speed gates with automatic cut-offs. Water is fed from either city lines or from an 8,000-gal. heating tank into a float-controlled surge tank and thence into the water-measuring compartment of the aggregate batcher through two 4-in. solenoid valves, one of which closes when about nine tenths of the water charge has passed and the other, also automatically, when the desired weight has been reached.

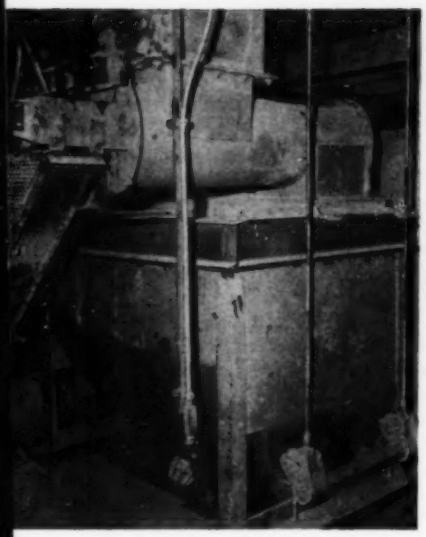
The $(SC)^2$ system for precise control of batching, and for quick and accurate compensation for the moisture content of the aggregates which is installed in this plant is basically similar to other $(SC)^2$ installations described in previous issues, but goes two steps farther than most of them: first, the weighing of each material in a batch is cut off automatically when its scale-weight is reached; and second, the charts recording graphs of cement and aggregate weights are stamped at each batching with a number corresponding with the machine ticket under which that load is to be delivered. The moisture content of the various aggregates is determined periodically by means of the $(SC)^2$ Toledo moisture meter scale. The percentage of moisture in a sample is determined in less than a minute by direct reading on the scale. In batching, corrections for moisture content are made by adding weights to a compensator beam of the water and aggregate-batching scale.

The cement batcher has an $(SC)^2$ Toledo dial scale with one beam, as only one type of cement is weighed





● Left: Shown in this view of the batching floor are the cement and aggregate scales and their recorders and the main control board.
● Right: The aggregate weighing scale and recorder, the control board, and (right) the meters for adding two types of air-entraining agents.



• Feeders and screws to the cement batcher in the mixing plant.

for a batch. Three different types of cement, or two cements and fly ash can be stored in the three cement bins, and each can be weighed into any batch.

The aggregate and water batcher has an $(SC)^2$ Toledo dial scale with four beams. This can automatically weigh three aggregates and water into a batch. The weighing of the various materials is cumulative, but the scale dial goes back to zero for each material. As in other recent $(SC)^2$ installations, two Inspectographs, sealed automatic recorders, record the weight of cement and aggregates and water in each batch. They record the ticket numbers in sequence, which is done by punching a button.

The controls are arranged so that the operator can reach them all with the minimum of effort. In weighing out a batch the operator sets the cement, aggregates and water poises on the appropriate scale beams, and then pushes the buttons controlling the feed of each material into the batchers. The cement feed screws have two-speed drives, and the two water valves have progressive cutoffs, permitting rapid batching for most of the desired amount, then slower feed for accuracy, and automatic shutoff. The aggregate gates are one-speed and are cut off automatically and accurately. Push-button-controlled automatic gates discharge the batched aggregates through one spout and the water through another into the 6-cu. yd. T. L. Smith tilting mixer. At the end of the mixing period, usually 3

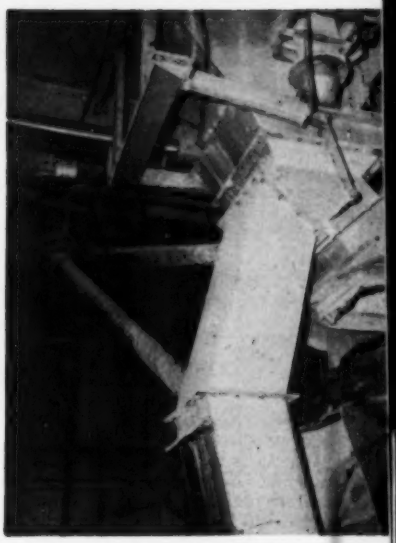
• The 6-cu. yd. plant mixer tilted to discharge into agitator trucks.

minutes, the operator pushes a short lever which controls the tilting of the mixer, to discharge its contents through a counterbalanced hopper into the agitator trucks. This hopper is motor-powered so that it can be raised or lowered to fit any make or size of truck mixer. A split chute under the batchers makes it possible to dry-load aggregates and cement for truck mixing if desired. A sloping glassed partition between the shell of the building and the batching floor makes it possible for the operator to see the truck below but keeps out dust and cold air.

The plant is equipped to use both Dewey & Almy Darex AEA and Master Builders Pozzolith dispersing agents as admixtures. Automatic dispensers on the batching floor provide for accurate metering of any desired percentage of either product into the mixing water. These products are used whenever specified or when air-entrained concrete is called for, as normally only Type I (standard portland cement) is being stocked. When the addition of flyash is specified, this is stored in one of the cement bin compartments; or if greater storage is needed to handle a carload, one of the four silo compartments may be used.

The system used for handling orders is as well systematized as other parts of the operation. Every effort has been made to get written records all along the line, so that every order can be traced from its receipt to the delivery and exact composition of each batch delivered. Orders for all materials are received at the main office at 33 North LaSalle St. The ready-mix

• One of the agitator trucks being loaded under the plant mixer.



• Chutes under the water, cement, and aggregates weighing batchers with the discharge chute (right) to the 6-cu. yd. plant mixer and the chute (left) for direct loading for dry-batching or truck mixing.

orders are then Teletyped to the 7 yards where it is to be produced. At the Yard No. 1 mixing plant the yard clerk transmits the order for each truck-load by Telautograph to the operator on the batching floor; the instruction includes the truck number and delivery ticket number, as well as the quantity and mix.

The truck mixer driver is given a numbered dray-ticket which is simple but which has conditions printed on the reverse side based on long experience in this field; as has been mentioned, this ticket number

has been stamped on the batchgraphs of cement and aggregate weights. As shown in the illustration, the ticket has space on the front for the regular routine information and for entry of the time of arrival on the job and the time of dumping, with space for the signature of the purchaser or his agent. If any extra water is added at the job, this must also be signed for.

The conditions on the back of the ticket read as follows:

CONDITIONS

Roadway

Purchaser agrees to maintain a suitable roadway for Seller's trucks to the point of delivering materials. Purchaser is responsible for any damage by or to Seller's trucks after leaving the street pavement.

Delays

Seller's price for material delivered at job-site is based on prompt unloading of trucks. Purchaser will be liable, at Seller's current rates, for demurrage time of trucks at site in excess of free-time of fifteen (15) minutes allowed for unloading. As Seller exerts every reasonable effort to maintain scheduled deliveries, Seller will not be liable for delays from causes beyond its control.

Responsibility

This load of concrete has been prepared in accordance with specifications given by Purchaser. Seller will not be responsible for results caused by any water added to the concrete at the job in excess of the amount determined by Seller to be required. Any water added by Seller upon the Purchaser's instruction must be noted hereon.....gal.; and such quantity must be acknowledged by the purchaser's signature.

.....
Purchaser

The company now operates a fleet of about 100 truck mixers of Jaeger, Chain Belt and T. L. Smith manufacture, nearly all of the high-discharge type, rated at 6½, 5½, 4½ cu. yds. as mixers. As agitators, they are rated at 8⅝, 7⅜, and 6⅛ cu. yds. These mixers are mounted on Marmon-Herrington, White, Mack, and International chassis. The assignment of these truck mixers to the 7 plants requires careful planning as the demand at each of them varies from day to day.

As a part of its ready-mixed concrete production program, the corporation is building garages at five of the plants. The one at the No. 1 yard will have space for 20 trucks, with adequate servicing facilities. Near the garage and dock a concrete washout pit is being installed which can be cleaned out by the crane when necessary; the refuse material will be loaded on barges for disposal.

Material Service Corporation, under the guidance of Col. Henry Crown, chairman of the board, has grown from a small material dealer and gravel producer in the 1920's to one of the largest companies of its kind in the country. It operates, directly or through subsidiaries, 24 plants producing sand and gravel, crushed stone, agricultural limestone, lime, roasted dolomite, and ready-mixed concrete. The volume of building materials handled has shown a similar growth. Also active in the production phases of the company's business are: Irving Crown, executive vice-president; George W. Lenzie, vice-president and general superintendent; and H. A. Montgomery, vice-president and chief engineer. Sidney J. Marks is vice-president and sales manager.

In entering this new field, Colonel Crown selected as manager of the ready-mixed concrete division, Harry F. Thomson, a man with wide experience in all phases of the ready-mixed concrete industry. Mr. Thomson first entered into ready-mixed concrete production in St. Louis in 1927, when the industry was in its infancy. He has always been close to the development and technology of the industry, having served as president of the National Ready Mixed Concrete Association. For many years he has represented the industry on trade and technical committees, and has headed several of the association's committees. He has been active in the American Concrete Institute and is currently the nominee for president of that organization in 1951. He recently served as a national director of the American Society of Civil Engineers.

All three of the new central-mixing plants were designed by John F. Meissner Engineers, Inc. This firm designed the plants from the foundations up, including all inclosures, to fit the standard dry-batching and central-mixing structures and cement silos. All erection was done under the supervision of Mr. Lenzie and H. Achim, construction superintendent. The entire electrical control system was designed by the Meissner organization in cooperation with Frank Leske, electrical engineer for the corporation.

The Butler Bin Company supplied the actual dry batching and central mixing plant structures, complete with bins, batchers, feed screws and gates, etc., except for the 6-cu. yd. T. L. Smith tilting mixer. The SC^2 equipment included Toledo Scale Co. scales and heads. Barber-Greene supplied the belt conveyors, complete with idlers, pulleys, and steel trusses. Hewitt-Robins conveyor belts are used throughout. Other equipment includes Screw Conveyor Corp. screw conveyors and Link-Belt cement elevator. All drives are through Falk motor-reducers with Allis-Chalmers motors. Belt conveyors Nos. 1, 2, 3, and 4 are driven by 15-, 50-, 25-, and 15-hp. motors, respectively, the screw conveyors by 10- and 20-hp. motors, the bucket elevator by a 15-hp. motor, and the plant mixer by a 100-hp. motor.

Edmund Wargin, 35, was accidently killed when he fell into a hopper of sand and gravel at the concrete block plant of the Arlington Concrete Products Company, Arlington Heights, Ill.

Mr. Wargin was loosening the aggregate in the 70-ft. bin and apparently slipped. No one saw him fall, and it was some time before other employees discovered the accident.

A. J. Raynor has been appointed executive secretary of the New York State Bituminous Concrete Producers Association, Schenectady, N. Y. He also is field representative of the Associated General Contractors of America and has been associated with the construction industry since 1907, specializing in highway building.

A Certificate of Award was presented to Ivy H. Smith of Jacksonville, Fla., by the Southeastern Concrete Pipe Association at its third annual convention. The award was presented "in recognition of and appreciation for the time, thought, and untiring effort contributed to the successful organization and development of that association."

In order to maintain traditional standards of service for their expanding concrete business, officials of the San Xavier Rock and Sand Company, Tucson, Ariz., found it necessary to add two units to their fleet of nine ready-mix trucks. The team of 5-cu. yd. capacity Jaegers arrived recently and are reported in service.

Block Production Set New Record In 1950

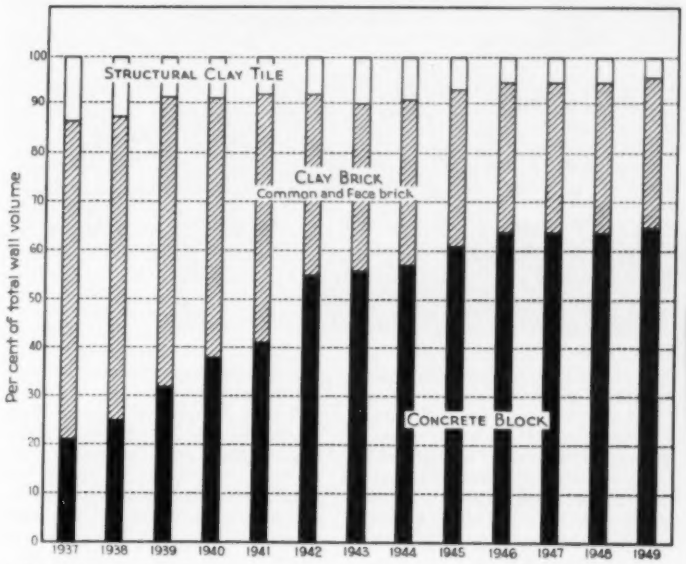
Output increased 20 percent to about 1,400,000,000 units. Wages, prices also advanced.

BASED on survey data collected and compiled by *The Concrete Manufacturer*, the production of concrete masonry units in 1950 increased at least 20 percent over the preceding year, bringing the industry's total output to an all-time record high of about 1,400,000,000 8- by 8- by 16-in. equivalents. The projected figure is based on information supplied by producers whose 1949 output was just over 100,000,000 units, or about 8½ percent of the industry's total output in that year.

By WILLIAM M. AVERY

Substantial production gains were indicated in all sections of the country, with the largest increases showing among Eastern and Midwestern producers—24 percent and 21 percent respectively. Indicated production in the South was 15 percent greater than in 1949. The West (including the West South Central states, the Mountain states, and the Pacific states) shows an increase of about 11 percent over 1949. It should be noted, however, that the latter figure includes almost no data for the state of California, where in all probability there was a much larger increase than in other Western states.

On the basis of the indicated percentage increases, the block industry's 1950 output was probably distributed among the four major sections of the country about as follows: East, 370,000,000 units; Midwest, 490,000,000 units; South, 385,000,000 units; and West, 180,000,000 units. Production figures for the survey were necessarily based upon output for the first ten months of 1950, as compared with the corresponding period of 1949. The reporting companies showed an actual increase of 31 percent for this period, but in projecting this figure over the entire industry it was necessary to take into account two factors which could not be covered by the survey: first, the plants that produced in 1949 but not in 1950; and second, the fact that in 1949 a large share of the industry operated at peak, or near-peak, capacity right up to the end of the year, whereas severe winter weather and tightening credit controls both tended to slow down output in the closing months of 1950.



• The tremendous output of concrete masonry units in 1950 was to a large extent an outgrowth of the product's inroads upon markets formerly held by competitive masonry materials. The chart above shows the relative annual consumption from 1937 through 1949 of three major masonry materials (concrete block, clay brick, and structural clay tile) expressed in percent of estimated total wall volume.

• It is probable that more concrete blocks were used in home construction in 1950 than in any other year in history. Exposed jobs, such as the one pictured above, were also far more in evidence.

Cement Shortage The questionnaires which were mailed to over 500 producers asked for data on the effects of the severe cement shortage which developed early in the second half of the year. Although there were individual instances of acute distress due to lack of cement, the replies indicate that the industry as a whole was not seriously affected. Almost half of the produc-

• Filler units for floor and roof construction accounted for an important share of production in 1950. Many believe that this still relatively new market will ultimately absorbs up to 500,000,000 8-in. equivalents annually.

ers who submitted information answered "Yes" to our blunt question: "Did you lose production this year due to the cement shortage?" Among this group, however, the total loss in units was only 5.4 percent of actual production for the first ten months of the year, or a loss of a little over 7,000,000 units out of a total production of 131,000,000 units.

The effects of the cement shortage were surprisingly uniform in all sections of the country, indicating that the cement industry is doing a much better job of distributing available supplies than has generally been supposed. In the South, where cement shortages inevitably hit hardest, two producers out of three reported some loss of production due to lack of cement, but the losses added up to only 8½ percent of actual production. Similar data for the West indicated a production loss of 5.7 percent, and for the Midwest and the East 4.7 percent and 3.1 percent, respectively.

Hourly Capacity

Block producers were asked to indicate their hourly productive capacity as of January 1 and November 1, 1950. The average per plant was approximately 798 units per hour on November 1, as compared with 778 units per hour on January 1, an increase of only 2½ percent. Taking into account altogether new plant capacity, however, the industry's total hourly productive capacity increased almost 9 percent, the same increase shown by *The Concrete Manufacturer's* survey of a year ago.

In both the South and the West total hourly capacity increased by almost 14 percent, whereas the gains in the East and Midwest were only 5 percent and 7 percent, respectively. Average hourly capacity per plant for the reporting group rose from 492 to 560 in the South, and from 1020 to 1035 in the West. The Eastern and Midwestern plants remained virtually unchanged at 900 and 750 units per hour, respectively.

In view of the relatively small increase in block plant capacity reported in 1950, it follows that the substantial gain in production must have resulted primarily from longer hours of operation. This conclusion was also borne out by the questionnaire data. Whereas the reporting group could have handled its total production for the first ten months of 1949 in only 1,380 operating hours, output for the corresponding period of 1950 would require 1,660 hours of operation per plant. By projecting these figures over the full 12 months, it appears that the average plant operated close to 2,000 hours in 1950, as compared with about 1,650 hours in 1949.

Prices The average f.o.b. selling price of 8- by 8- by 16-in. units showed modest increases in all sections of the country, although many individual producers held to their 1949 schedules, and a few even made small reductions to meet competition. For the entire reporting group the average rose from 18.7 cents on January 1 to 19.3 cents on November 1, or a little over 3 percent. In the Midwest the average increased from 17.9 cents to 18.4 cents, in the East from 16.8 cents to 17.5 cents, in the South from 18.4 cents to 18.8 cents, and in the West from 22.3 cents to 23.2 cents.

Wages Wage increases were quite general throughout the block industry in 1950. For the entire group that submitted data, average hourly wages increased a little over 6 percent—from $1.13 on January 1 to $1.20 on November 1. Producers in the Midwest showed an increase from $1.19 to $1.24; in the East, from $1.19 to $1.26; in the South, from $0.84 to $0.93; and in the West, $1.20 to $1.29. The relatively large increase (10 percent) shown by the Southern group of producers was undoubtedly influenced by the higher minimum wage requirement which

• Below: Evidence of the industry's renewed interest in merchandising was the number of attractive concrete masonry plant office buildings built in 1950. Structures like the one pictured below are no longer exceptions to the rule.

• One of the important factors in the steady rise in plant efficiency has been the practice of cubing output. Under the pressure of steadily rising labor costs, even relatively small producers began to adopt the practice in the year just closed.

went into effect during the year, although only a few producers reported wages of less than 75 cents per hour on January 1. None of the companies which submitted data showed wages of less than 75 cents per hour on November 1.

Lightweight Units Lightweight units accounted for 48 percent of the total output covered by the survey, indicating that the entire industry probably produced approximately 670,000,000 lightweight units in 1950. The reporting group indicated that 44½ percent of production in 1949 consisted of lightweight units. A few producers showed small losses in 1950 due to material shortages, but such losses were more than offset by substantial gains made by others in the industry.

Although the largest gain in percentage of lightweight units occurred in the Midwest, that section of the country continued to lag far behind the rest of the nation. Producers in the Midwest showed 34 percent of their 1950 production as lightweight, as compared with only 29 percent in 1949. The South increased from 59 percent of 1949 production to 62 percent of 1950 output, and the West topped the entire group with a gain from 60 percent in 1949 to 64 percent in 1950. Eastern producers covered by the survey showed 51 percent of 1950 output in the lightweight category, as compared with 50 percent in 1949.

Outlook The questionnaire asked producers to predict whether their output will increase, decrease, or remain about the same in 1951. A surprising 50 percent of those who replied predicted increases ranging from 10 to as much as 100 percent, and only 20 percent expressed the fear that production would drop appreciably. The remainder expressed the opinion that their 1950 performance would be repeated in 1951. Many reminded us, and with good reason, that their predictions were little more than guesses, but if the replies indicate nothing else, they surely suggest that the morale of the industry is high.

A closely related question had to do with plans for increasing capacity in 1951. Although the answers to this question were frequently hedged, 37 percent of the replies were affirmative. Of the remainder, 53 percent said "No", and 10 percent ducked the question altogether. Information was also requested regarding the number of additional units per hour of capacity which would be installed in 1951. Producers with a present total hourly capacity of 79,000 8- by 8- by 16-in. equivalents indicated proposed additions totaling about 10,000 units per hour, an increase of over 12 percent. Most of the individual increases were large enough to indicate that they would have to be accomplished by installing new equipment, rather than by speeding up existing machines.

• An important new market for concrete masonry units looms in the field of prestressed concrete. Elsewhere in this issue is a report of two projects in which structural members were built with prestressed machine-made units.

The block industry's optimistic view of its prospects in 1951 is in rather sharp contrast to unofficial forecasts, which indicate that the total value of construction in the new year will be at least 15 percent below the $27,300,000,000 level of 1950. A careful study of such forecasts, however, reveals that many of the categories of building in which concrete masonry is strongest are expected to remain at high levels in 1951. The principal exception, of course, is in the field of private residential construction, which is expected to drop about 50 percent below the level of 1950, due largely to the tightening of credit controls. The loss of so large a share of one of its important markets would unquestionably hurt the block industry, but the industry's attitude seems to be that this loss can be largely offset by more vigorous merchandising in other fields.

Of the three major masonry materials (concrete block, clay brick, and structural clay tile), concrete block accounted for almost 64 percent of the total wall volume constructed in 1949. A scant ten years ago (see chart) concrete block accounted for less than 40 percent of the total, and as recently as 1937 its share was only a little over 20 percent of the total. These steady gains indicate that the block industry has every reason to regard the future with confidence, for its product has won a secure place in the building material field.

1951 Convention Another indication of the excellent morale of the block industry is the widespread advance interest in the National Concrete Masonry Association's 31st annual convention, which will be held in the Public Auditorium, Cleveland, O., January 22 to 25. With the double lure of a fine convention program and the seventh biennial Concrete Industries Exposition, attendance is expected to pass by a comfortable margin the record of more than 4,000 established at the Cleveland Auditorium in 1949. Advance space reservations by equipment manufacturers indicate that the show will be the largest ever put on for the industry. Whereas the 1949 show was comfortably housed in the arena of the Auditorium, for the 1951 exposition it has been found necessary to provide additional exhibit space in a separate hall below the arena.

Merchandising One of the outstanding, and certainly one of the most encouraging, developments in the block industry in 1950 was the widespread activity in the field of merchandising. Big companies and little companies in all sections of the country seemed at long last to be showing a serious interest in the development of new markets. More companies undoubtedly set aside a portion of their income for advertising than in any other year in recent history.

Although still a relatively virgin

(*Continued on page* 226)

Block Makers Hold Southeastern Regional Meeting in Tampa, Fla.

THE fourth annual Southeastern Regional Meeting of the National Concrete Masonry Association was held in the Tampa Terrace Hotel in Tampa, Fla., on November 13 and 14, 1950.

Work and play seemed to be the keynote of the convention, with the mornings dedicated to lively business sessions and the afternoons to interesting sightseeing bus trips and plant inspections. With a total registration of 240, including 73 ladies, it was the largest meeting ever held by the group. Many concrete products producers brought their wives along, making the occasion a part of their winter vacations.

The first morning session was presided over by George W. Katterjohn, past president of N.C.M.A. E. R. Dickenson, representing the mayor of the city of Tampa, welcomed the conventioneers to Tampa.

E. W. Dienhart, executive secretary of N.C.M.A., reviewed some of the highlights in the history of the association, pointing out that the present soundness of the concrete masonry industry is largely a result of the unity established some years ago. During World War II, Mr. Dienhart said, N.C.M.A. successfully convinced the various government agencies of the value and need to keep this industry active. Priorities were secured enabling manufacturers to obtain machines. Thus, after the shooting war was over, the concrete masonry industry was on a sound basis well equipped and ready to produce. With its engineering staff and technical bulletins the association is also constantly at work to prevent any unfavorable rulings against concrete block. A rapidly expanding market for concrete masonry lies in the field of concrete block floor systems, Mr. Dienhart said. He referred to a building in Seattle, Wash., that has over one-half million 8- by 8- by 16-in. units in the floors alone. Use of concrete masonry for this type of construction is now possible through the availability of a technical bulletin published by N.C.M.A.

An advertising consultant, R. E. McCarthy, said that "advertising cuts the cost to the consumer and ultimately results in an improved

• With George W. Katterjohn at the piano, this group apparently ruled out serious business at the dinner dance after a day of meetings and discussions.

• The group attending the meeting, photographed while visiting the plant of the Hart Concrete Products Company.

• A candid shot of the visiting gentlemen enjoying a chicken luncheon at the Hart plant.

standard of living". He asserted that a concrete products manufacturer's most important competitor is not another concrete products manufacturer, but the man who sells other competitive products. Such competitors have long had public acceptance, and many have large sales forces. They are trying to recapture the markets won by concrete masonry, and are spending large sums in sales promotion. Block manufacturers were urged to avail themselves of literature, technical bulletins and sales promotion material published by P.C.A. and N.C.M.A. In advertising, Mr. McCarthy said, promise the customer such things as fire safety, strength and rigidity, protection from termites, and other features that are unique with concrete masonry construction. He urged the use of truck signs as an excellent and inexpensive means of advertising.

George J. Votaw, architect from West Palm Beach, had delivered such an inspiring address at last year's meeting that popular demand required his presence at this convention. He urged that a salesman, when calling on architects, should (1) know his product, (2) introduce himself briefly, (3) briefly state his business, (4) if necessary, have approval from the local building department for his product, (5) leave a catalog of drawings, sizes, weights, prices, and delivery time, and (6) leave a sample. The interview should not take more than 5 minutes, and the salesman should call back in 30 days. The weakness of most salesmen, Mr. Votaw said, is overselling. The speaker suggested that concrete masonry manufacturers investigate the prestressed concrete field, for he believes the future of concrete construction lies in that direction.

• Plant of the Pinellas Lumber Company at St. Petersburg, Fla., which was visited by the members on one of their trips.

Dr. Frank Goodwin, professor of marketing, sales psychology and merchandising at the University of Florida, discussed the *Little Things That Count* in a successful business. He claimed that many times the manner in which truck drivers, salesmen, or office help come in contact with the public influences the immediate sale, and even future sales, of concrete products. Good human relationship, Dr. Goodwin said, is the foundation of all business. His fundamental rule for establishing good human relationship with employees is to "call a man by his first name, pat him on the back and then ask him to help you". Place your driver's name on his truck, he suggested, and watch him take care of it.

On Tuesday M. E. Rinker, one of the directors of N.C.M.A., presided over another lively session. S. H. Westby, of the Housing and Cement Products Bureau of the Portland Cement Association, discussed *Sales Building Helps for Products Manufacturers.* He explained that in all P.C.A. national housing ads the prospective home builder is referred to the local concrete masonry manufacturer for names of architects and builders experienced in concrete house design and construction. The speaker urged manufacturers to have such information available, and to tie in their local promotion with these national ads. He announced that the P.C.A. plans to supply concrete masonry producers with arvance ad proofs and dates of P.C.A. ads featuring concrete masonry houses which will appear in national magazines. Thus producers can schedule newspaper advertising, radio and other local promotion ma-

(*Continued on page* 224)

Use Machine-Made Concrete Units On Prestressed Concrete Structures

THE recently completed football stadium at Fayetteville, Tenn., is the first prestressed concrete structure employing machine-made, concrete units and galvanized prestressing cables to be constructed in this country. The stadium is 190 ft. long, 32 ft. wide, and 17 ft. high and provides seating facilities for 1,525 spectators. The seats are of the bleacher type, consisting of two 2- by 6-in. planks bolted to specially designed, concrete brackets spaced at 5-ft. intervals. Construction was completed in 32 working days by a crew of 9 men composed of 2 block masons, 1 carpenter, 5 laborers, and 1 foreman. The total cost, including engineering fees, was $11,500 or, approximately $7.65 per seat. This figure is approximately one-half that of a comparable reinforced concrete stand, and it compares favorably with the better grades of prefabricated steel bleachers with wood treads and seats.

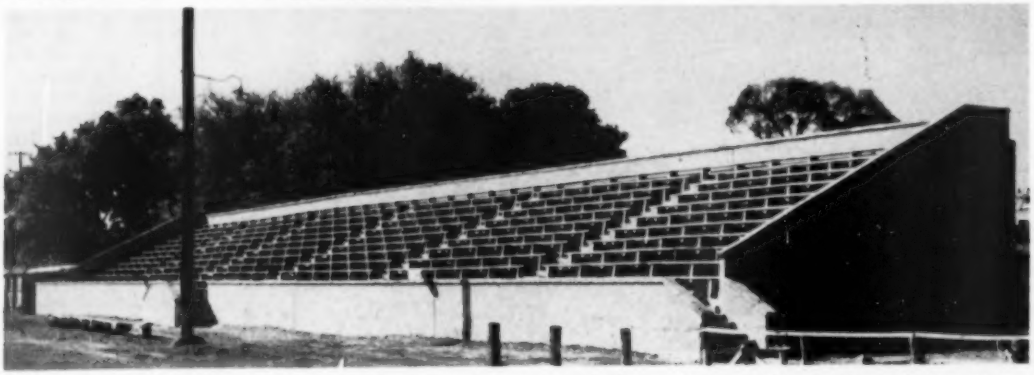
A unique feature of this structure, aside from its prestressed construction, is that it was constructed entirely from machine-made, concrete units. The only poured concrete on the entire job was used in the footings for the supporting piers, to close the small spaces between the abutting ends of the prestressed beams, and in the short steps leading from the field to the front aisle.

The prestressed beams, which are 31 ft. long and span 30 ft. between 16-in. concrete masonry piers, were constructed from specially designed, 12- by 8- by 16-in. concrete units having a minimum compressive strength of 3,750 p.s.i These units were assembled face to face on a level timber bed and prestressed by means of two galvanized steel cables which pass through the open cores and are terminated against two steel bearing plates at either end.

(*Continued on page* 226)

• Prestressing a completed beam. Loose blocks on the beam being prestressed are for use in the assembly of the next beam. Two completed beams may be seen in the background.

• Setting the beam. This particular beam was used at the top of the stands, and the metal ties protruding from the top were used to anchor the rear wall.



• The completed stadium. The dark blocks showing on the end pier, apparently of a rougher texture than the others, failed to reflect as much light; these blocks do not appear darker to the eye.

American Concrete Institute Holds Regional Meeting in Washington

A VERY successful regional meeting of the American Concrete Institute was held at Washington, D. C., on October 24, 25 and 26. Technical sessions were held at the Mayflower Hotel. This was the third such regional meeting, apart from the annual convention, which has been held by the institute; the first was in Birmingham in 1947 and the second in Boston in 1949. In each instance a local committee has handled all arrangements, including the program; the general chairman at Washington was E. W. Bauman, managing director, National Slag Association. The attendance was 322, which included many from outside the local environs; it was the largest of the three regional affairs.

The meeting opened with an informal luncheon on Tuesday, October 24, which was attended by representatives of most of the government agencies concerned with construction and the use of concrete. The principal speaker was General Eugene Reybold, former chief of army engineers, who described some of his interesting experiences during duty in the Philippines some years ago, and then proceeded to stress the need for a continuing program of highway construction and improvement as an important factor in the national economy and defense.

Frank H. Jackson, president, American Concrete Institute.

E. W. Bauman, managing director, National Slag Assn., chairman of arrangements committee for the Washington meeting.

He referred particularly to the improvement in concrete highways resulting from the use of air entrainment.

Frank H. Jackson, president of A.C.I., presided at the technical session which followed the luncheon. The first paper was presented by B. W. Steele, special assistant to the chief of engineers on *Design of Concrete Mixtures for the Interior of Dams*. This paper outlined the requirements of a lean, impermeable concrete with cobble rocks, coarse aggregate, and well-graded fine aggregate, which permits the use of only three bags of cement per cubic yard and in which cracking is prevented by artificial cooling.

Precautions in finishing pavements made of air-entrained concrete were outlined by Charles W. Allen, research engineer, Ohio State Highway Department. He pointed out that the absence of bleeding requires the finishing operation to keep much closer to the placing of the concrete than was practicable without air entrainment. The insistence on good workmanship has resulted in excellent riding qualities in the 54 miles of concrete pavement built in Ohio this year.

In an interesting paper on *Effective Sealing of Joints in Concrete Pavements*, H. C. Clemmer, engineer of materials, District of Columbia, emphasized the need for leakproof joints under all conditions of weather and temperature. He described various types of metal and mastic seals; in the latter class some of the recent preparations based on neoprene have shown promise.

The session closed with a paper by Dr. Henri Marcus, Bureau of Yards and Docks, describing recent tests by the Bureau of Standards on the effectiveness of dowels and other devices for carrying loads across transverse joints of concrete pavements. A theoretical analysis of various static loads indicated that the performance depended largely on the bearing value of the soil beneath the joint.

The social side of the meeting took the form of an oyster bake at the dinner hour, served by the Mayflower, which proved to be an elaborate buffet offering almost everything edible from soup to nuts but with baked oysters conspicuously absent. However, those attending enjoyed the informality of the affair.

Stanton M. Walker, engineering director, National Ready Mixed Concrete Assn., also an A. C. I. past president.

On Wednesday morning there was an open forum on ready-mixed concrete, at which Stanton Walker, engineering director, National Ready Mixed Concrete Association, Washington, D. C., served as moderator. A panel of experienced members of

H. F. Thomson, manager, ready-mixed concrete division, Material Service Corp., Chicago, Ill., also vice-president, A. C. I.

the industry was on hand to discuss the various topics presented. Personnel of the panel included Alexander Foster Jr., Philadelphia; A. A. Levison, Pittsburgh; Charles P. Maloney and Murray S. Simpson, both of Washington; Robert F. Porter, Baltimore; John W. Roberts, Richmond; and H. F. Thomson, Chicago. Mr. Walker presented a number of questions which had come to him in the course of correspondence, which were discussed by members of the panel and from the floor. Some of the discussions were very lively, notably the one on the use of calcium chloride under both normal weather and winter conditions; the consensus was that the accelerated setting from chloride could frequently be utilized beneficially but that judgment should be exercised in its addition. Other subjects discussed included the inspection of foreign cement, lightweight aggregates for structural and insulating purposes, speeds of drums for mixing and agitating, special precautions in warm weather, and wear of blades in truck mixers. The session was well attended, and the audience showed keen interest.

Following the forum, there was shown a colored motion film on the *Prestressed Concrete Construction of the Walnut Lane Bridge in Philadelphia*. This is the first major prestressed bridge in the United States.

The chairman of the afternoon session was A. T. Goldbeck, engineering director of the National Crushed Stone Association and vice-president of A.C.I. The opening paper was presented by Fred Burggraf, Highway Research Board, reporting on the progress of the cooperative tests to determine the *Effect of Heavy Loads on Concrete Pavements*. In these tests, trucks with several wheel-loadings are being operated over selected stretches of concrete highway in northern Virginia. The indications thus far have been that tandem rear axles loaded to 44,800 lbs. have caused more distress to the concrete than similar axles carrying 32,000 lbs., which is the limit under the present regulations of many states.

The application of machine technique to concrete housing construction was discussed by William V. Reed, Ibec Housing Corporation, a company which has erected extensive housing projects in New York City and elsewhere.

D. S. Jenkins of the J. E. Greiner Company presented a paper by R. A. Gilmore of the same company, describing concrete construction on the Chesapeake Bay Bridge. This project will furnish long-needed communication between the west and east shores of the bay. It is located a short distance above Annapolis and will cost $37,000,000. The total length, including approaches, is 7.8 miles; the navigation channel is crossed by a suspension span with 1,500 ft. between piers and clearance of 188 ft. above high water. The procedures in constructing the main concrete piers and other foundation structures were described.

The closing paper, presented by Rudolph Valore Jr., National Bureau of Standards, outlined tests conducted by the Bureau on "no-fines" air-entrained concrete. These tests indicated that the strength of such mixes was very sensitive to the air content.

A. T. Goldbeck, vice-president, American Concrete Institute.

On Thursday a large group made an all-day inspection trip to the Chesapeake Bay Bridge project. The trip, via buses, included a visit to the U. S. Naval Academy at Annapolis, lunch at Carvel Hall adjacent to the Academy reservation, and embarking on small boats for a close view of the bridge construction.

S.E. N.C.M.A. Meeting

(From page 221)

terial to fully capitalize on the P.C.A. national advertising program.

The morning session closed with a lively open forum period during which questions sent in by producers were answered by a board of seven experts. Many of the questions concerned such problems as curing standards and methods for preventing cracks in concrete masonry walls.

The following Florida members and associate members of N.C.M.A. were hosts to the meeting in Tampa: Aquatite Tile Co., Pinellas Lumber Co., Gillis Block & Material Co., Annis Building Supplies, Inc., King Concrete Products, Joseph M. Ripley, Cement Products & Supply Co., Inc., Ruebens Cement Block Co., A-1 Concrete Products, Inc., Ramsey Brothers, Acme Concrete Corporation, Inc., Naples Supply Co., Maule Industries, Cummer Lime & Manufacturing Co., Kissam Builders Supply Co., Shirley Bros., Inc., J. R. Ashbell & Co., Inc., Dunbrick Co., R. C. Martin Concrete Products, Inc. Sarasota Concrete & Block Co., Hanson, Wood & Hoel Industries, Inc., Hart Concrete Products Co., Tampa Sand & Material Co., Rinker Materials Co., J. W. Appley & Son, Inc., and F. C. George Machine Co., Inc. Contributing members were W. A. Ketchin, Everett C. Livesay, and Ben G. Wallis.

Ohio Concern Develops Economical Mortarless Unit

Hydro-Forged Stone Associates, Inc., Cleveland, O., have announced a newly-perfected interlocking building block for defense walls and low-cost housing. The units are made entirely from waste materials and require no mortar.

Designed for tongue-and-groove joining, the patented "Speedblocks" resemble cut stone, granite, or marble. It is said that the cost is less than that of ordinary concrete blocks. After erection of a wall, a spray of concrete, sand, waterproofing and color is applied. The units are available in all standard sizes from plants in Euclid, O., and Vineyard Haven, Mass.

Something New in Truck Mixers — Chicago Producer Develops Hydraulically Operated Unit

FOR the last several months a new type of transit mixer, incorporating several features of design which are new to the ready-mixed concrete field, has been operating in the Chicago area. The units, eight of which are now in service, were designed and built by the Imperial Ready-Mix Concrete Company and are operated in conjunction with the firm's central-mixing plant at Melrose Park, Ill. The unique design, utilizing a hydraulic pump and motor operated from a conventional power take-off, is said to achieve better weight distribution and to permit hauling substantially larger payloads for units of a given capacity.

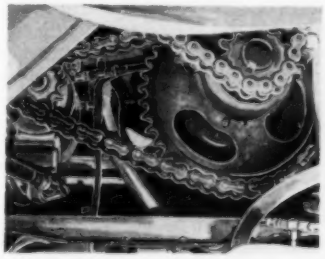
Called "Hydrocretes" to suggest the hydraulic drive application, the units were designed from start to finish around the power take-off principle. Both the hydraulic pump, which is coupled to the side-opening power take-off of the truck with a "U"-joint shaft, and the hydraulic motor are of the rotary vane type. Their combined weight is only 130 lbs. The pump produces hydraulic fluid pressure up to 2,000 p.s.i., and the motor has a torque output of 3,300-in. lbs. from a dead standstill.

The mixer drum can be rotated in either direction or stopped by means of a 4-way valve which directs the fluid into either of two ports in the motor. There is no clutch to engage, and no gears must be shifted. Drum speeds of 10 to 12 r.p.m. for mixing and discharge are obtained with moderate engine speeds, and speeds of 3 to 5 r.p.m. for transit agitating can be secured by means of a by-pass valve in the hydraulic lines.

The 4-cu. yd. drum on the present Hydrocrete units is the long, open-end-discharge type, which makes it possible to attain a very high discharge point and at the same time a low center of gravity, since of necessity the concrete must ride below the discharge port. The 20-degree inclination of the drum axis (compared with about 16 degrees in most conventional truck mixers) places the bottom of the collecting chute 7 ft. above the ground, or about a foot higher than most conventional units of comparable capacity.

The steep drum axis gives the mixer an appearance of being somewhat top-heavy, and at first some of Imperial's drivers expressed concern about the possibility of capsizing. To allay their fears, one side of a loaded unit was jacked up to the point where it was on the verge of tipping over, a condition which was reached only after the truck had been tilted about 32 degrees.

One objection to the long, open-end drum has been its tendency to place the center of gravity almost directly over the rear axle, with the result that only a small part of the total load could be carried on the front axle of the truck. The elimination of the separate engine drive in the Hydrocrete unit makes it possible to place the drum about 24 in. closer to the cab, effecting a weight distribution (when loaded) of about 6,000 lbs. on the front axle and 18,000 lbs. on the rear axle. The mixer (weighing 4,000 lbs.), with a Ford F-6 cab-over-engine chassis (weighing 5,000 lbs.), can haul 3¾ cu. yds. of concrete and stay within legal load limits. With additional refinements in the design, Imperial hopes to reach its objective of a legal 4-cu. yd. load.



• This photograph shows the working heart of the mixer. To the left is the hydraulic motor, which, although only 80 lbs. in weight and 7 in. in diameter, produces 14 hp. with ease at 250 r.p.m. To the right is the jackshaft for reducing motor speed to drum speed. The shaft and the large and small sprockets are supported by two large pillow-block bearings. The motor and jackshaft are both mounted on the bottom of the hydraulic reservoir.

Despite the steep pitch of the drum, the Hydrocrete is said to discharge stiff concrete without difficulty. In a test one of the units, loaded with 2-in. slump concrete, was backed up a 17-degree ramp, so that the axis of the drum was actually pitched at 37 degrees to the horizontal. From this position the entire load was discharged in a continuous flow. This is attributed to the rather large drum opening, and to the use of larger than usual blades, pitched rather closely in the last revolution at the rear.

In designing the Hydrocrete, Imperial has also undertaken to eliminate the jointed-type chute and yet retain flexibility as to length. This goal was achieved by designing two separate chutes 5 ft. and 12 ft. in length. The 5-ft. length is permanently mounted on a swing bracket, while the long section bundles inside it using the short section as a cradle support. When the short section is used independently, the long chute is held by brackets on the side of the truck.

Either chute is raised or lowered by a hydraulic cylinder and there is no manual lifting at any time—during pouring, placing the chute alongside the truck for traveling, or in disconnecting the two

(*Continued on page 227*)

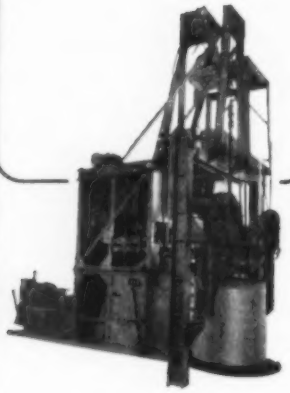
• Left: A general view of the central mixing plant of the Imperial Ready Mix Concrete Company at Melrose Park, Ill., showing in the foreground the eight truck mixing units developed and built in the company's own shops.

• Below: A view of the 12-ft. chute in use on the job. The upper section rests in the 5-ft. chute, which can be raised or lowered hydraulically, and there are no joints for the concrete to pass over.

yes, you can

Buy or Lease

this Universal Concrete Pipe Machine



★ You needn't lay out the purchase price to begin enjoying the production and profits of this great machine. Leasing arrangements are possible on terms that assure profitable operation. The Universal Pipe Machine has set new higher standards for efficiency. It makes more pipe and better pipe with fewer man hours. Because it true-tamps at the incredible rate of 680 strokes-a-minute, you use a drier mix, get stronger pipe that handles with less damage, requires minimum curing. One of the four sizes (5"-24", 6"-48", 12"-60", 24"-72") will meet your requirements. Ask about the *Universal Lease Plan.*

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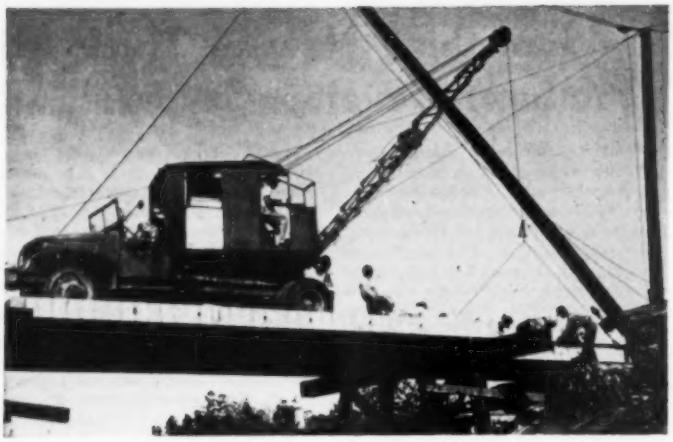


● A crane on a 30-ft. span. The rear axle load was 19,600 lbs. Note the absence of shoring.

Machine Made Units

(*From page 222*)

After the final prestressing force had been applied, the beams were hoisted into place with a small motor crane.

Of equal interest is a prestressed bridge, also incorporating machine-made concrete masonry units, which was opened to traffic in Madison County, Tenn., on October 30. Believed to be the first of its type to be placed in service in this country, the bridge is 70 ft. long and consists of three simple spans, 20 ft., 30 ft., and 20 ft., in that order. The deck is constructed from 45 prestressed beams 12 in. deep and 16 in. wide (15 in each span) placed edge to edge to form a total width of 20 feet. These prestressed beams were fabricated from machine-made concrete units, 12- by 8- by 16 in. in size and prestressed by means of two galvanized steel cables which pass through the open cores in the blocks and terminate against steel bearing plates at each end.

All of the concrete masonry units for both projects were supplied by the Nashville Breeko Block Co. The prestressed beams for the stadium required almost 5,000 12- by 8- by 16-in. high-strength units, and over 2,000 units of the same size were used in the prestressed bridge.

The galvanized prestressing cables, complete with end terminals and nuts, were furnished by John A. Roebling's Sons Company. Both structures were built from plans prepared by Bryan & Dozier, consulting engineers, Nashville, Tenn. A more detailed description of the work will be contained in a formal paper which the designers will present at the annual convention of the National Concrete Masonry Association in Cleveland later this month.

Block Production

(*From page 219*)

field, the floor filler market was undoubtedly an important factor in the industry's production gain in 1950. Perhaps as much as 8 percent of output went into floors in 1950, largely as a result of intensive selling effort on the part of producers who recognized the tremendous potential of this market. The National Concrete Masonry Association and the scores of local association groups in all parts of the country had done a top-notch job of directing the attention of their members to the floor filler market, and there were encouraging indications in the year just closed that these efforts were beginning to bear fruit.

Darden Industries Adds Toledo Firm to Licensees

Roy Darden Industries, Inc., announces the licensing of the National Cement Products Company, Toledo, O., to manufacture F & A floor and roof joists and filler blocks. This firm has a large portion of Ohio and several counties in Indiana and Michigan for its exclusive territory. A large building for the manufacture of the F & A products is now under construction at the Toledo plant. Cloyd B. Fellabaum is president of the concern. National Cement Products is the fourteenth licensee of F & A products.

William R. Stanley, president of the American Aggregate Company of Kansas City, Mo., recently announced that Smithwick Concrete Products of Portland, Ore., had been awarded the exclusive franchise for haydite throughout the Pacific Northwest. Whereas the franchise had previously included only Oregon, it now covers Washington and Idaho as well.

Something New in Mixers

(*From page 225*)

sections. Lateral movement can also be controlled hydraulically if desired.

Imperial's primary purpose in developing the Hydrocrete was to use the units as agitators in connection with their own central mixing operations. Tests conducted with a special blade design indicate that the mixer will work equally well on dry-batch mixing, and the hydraulic mechanism has been found to have an ample reserve of power for this type of operation. To determine the essential merit of the equipment under varied operating conditions, the company hopes in the coming year to place 20 or 30 of the units in the hands of other producers for thorough testing. Imperial is already at work on a 7-cu. yd. Hydrocrete mixer, with which it hopes to be able to haul a 6½ or 7-cu. yd. load without exceeding the Illinois limit of 41,000 lbs. This unit, of course, will be mounted on a 6-wheel chassis.

Imperial's ready-mix operations were established in 1947 as a division of Imperial Flooring & Waterproofing Company, a subcontracting firm which has operated in the Chicago area for the last 40 years. The present plant in Melrose Park, a western suburb of Chicago, was opened in June of 1948*, and in October of that year the company earned the distinction of operating the first transit-type trucks to be used commercially in Chicago. Of the present fleet of 25 trucks, 21 are transit-type units, although the company continues to central mix all its concrete. The Hydrocrete mixer was designed and developed by J. Foster Oury, president of Imperial.

*See: *Ready-Mixed Concrete Comes to Chicago Area*, PIT AND QUARRY, Dec., 1948, p. 134.

Trade Notes

M. G. Peck

Milton G. Peck has been appointed sales manager for the recently introduced line of Clark powered hand trucks, according to an announcement by W. E. Schirmer, vice-president of the Clark Equipment Company, Battle Creek, Mich.

Mr. Peck, who is widely known in the field of materials-handling equipment, was formerly associated in Philadelphia with Yale and Towne as sales manager of their Industrial Truck Division.

The thirty-first annual convention of the Wisconsin Concrete Products Association will be held at the Plankinton Hotel in Milwaukee on Thursday and Friday, February 8 and 9, 1951, according to word from A. W. Devos, secretary.

SEMI-AUTOMATIC • HYDRAULICALLY POWERED
LOW INITIAL COST FOR SMALL PLANT OPERATORS

Another Multico first — this new sensational LITTLE BEAVER block machine can get you started in the concrete block business with minimum initial costs. Designed particularly for the small plant operator, the LITTLE BEAVER offers Blockmaster high production, quality block output, at the same lower labor costs.

It is semi-automatic — can be inexpensively converted to be fully automatic at a later date. Manual controls located conveniently on the separate power pak, first release the aggregate — vibrate on pressure — then tamp the block to size, all in one simple cycle of operation.

The LITTLE BEAVER'S advanced design represents the know-how and experience acquired through Multico's 45 years in this industry. The machine uses plain steel pallets, enabling you to produce any size or type of block desired.

Have a Multico Field Engineer assist you in planning your plant now — let him tell you first hand how you, too, can have a profitable operation right from the start with the LITTLE BEAVER.

MULTIPLEX MACHINERY CORP. ELMORE OHIO

MANUFACTURERS OF BLOCK MACHINES • MIXERS • SKIP HOISTS • STRIPPERS • ELEVATORS

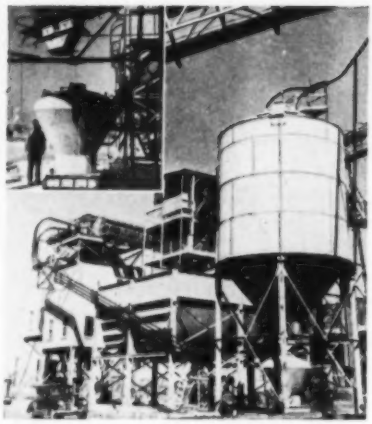
ROBINSON *Air-Activated* CONVEYOR

• Avoid Bag Costs—

Buy Bulk Cement

• Avoid High Bulk Handling Costs—

Use the Robinson System



YOU know of the change in conditions under which cement is now shipped. Cloth bags are out. Paper bags have to be paid for and disposed of. Bagged cement must be handled manually. All of this adds up to as much as 10c per bag which can be eliminated. Doesn't this point directly to the advantages of (1) buying cement in bulk and (2) handling this bulk cement pneumatically? This method will result in substantial savings over handling cement in bags.

Here's what the Robinson System has to offer: (a) proved lowest cost operation with moisture-free air and (b) no motor-driven parts in connection with the handling of the cement. Maintenance is negligible.

Our engineers will be glad to help work out a plan for you to receive cement in bulk and convey it the Robinson way from siding to storage to mixing plant. Many dam contractors, who sure have to watch their costs, and many concrete mixing plants are now Robinson-equipped.

ROBINSON *Air-Activated* **CONVEYOR SYSTEMS**

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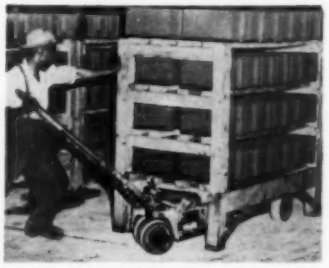
NEW MACHINERY and SUPPLIES

● Lift Trucks for Fragile Loads

The illustration shows a rack load of green concrete block being moved on a Barrett "Spring Frame" lift truck, a product of The Barrett-Cravens Company, 4609 S. Western Blvd., Chicago, Ill.

Barrett Spring Frame lift trucks were pioneered and developed for handling fragile materials, such as green concrete block.

The carrying frame of this hand lift truck is mounted on eight heavy coil



springs: it is full floating and not connected to the main frame except by those springs. Jolts and jars are therefore not transmitted through the frame to the load, which is further cushioned by the truck's rubber-tired wheels.

The Model RKL Spring Frame lift truck pictured handles loads up to 3,500 lbs., yet automatic operation makes it speedy and easy to use. There are no foot pedals or hand levers to engage. The operator merely runs the truck under the skid or rack, and lifts the load with a single stroke of the handle. Standard lift of this truck is 2⅜ in. It is claimed that even when heavily loaded, the truck is easily pushed along on its Hyatt bearing-equipped wheels. At destination, the load is lowered by hydraulic check.

● Silicone Water Repellent

A stone and masonry transparent liquid silicone water repellent called "Silaseal" for protection of unglazed exterior masonry and stone building materials is announced by Surface Protection Company, Cleveland, O. Said to render surfaces and mortar joints completely water repellent by stopping capillary action, Silaseal does not block the pores to interfere with normal "breathing" of stone and masonry.

The transparent water repellent, which contains no wax or oil, is reported to penetrate well below masonry surfaces to protect concrete, stone and brick surfaces against water penetration without altering the natural appearance of the treated surface. The new repellent will also reduce moisture collection due to

humid conditions on masonry, acoustical tile, gypsum board, and other insulating materials.

Silaseal, according to the manufacturer, also reduces the need for pointing mortar joints. One application is said to protect these vulnerable joints against water penetration and the freeze-thaw cycle of winter exposure.

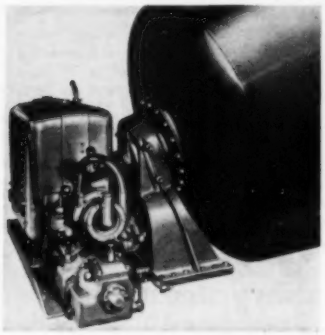
Silaseal may be applied with spray or brush in summer or winter. Masonry should be reasonably dry when application is made. Silaseal will dry to the touch within 30 minutes and will be completely dry within two hours under favorable conditions.

Coverage varies with the porosity and roughness of masonry surfaces. It will vary from 150-175 sq. ft. per gallon for concrete block.

● Truck Mixer Drive

An enclosed truck-concrete-mixer drive, the "Transo D-51", which eliminates heavy ring gears is being made by the Transmission and Gear Company, 10421 Haggerty ave., Dearborn, Mich.

The Transo Mixer drive couples directly to the drum through a secondary

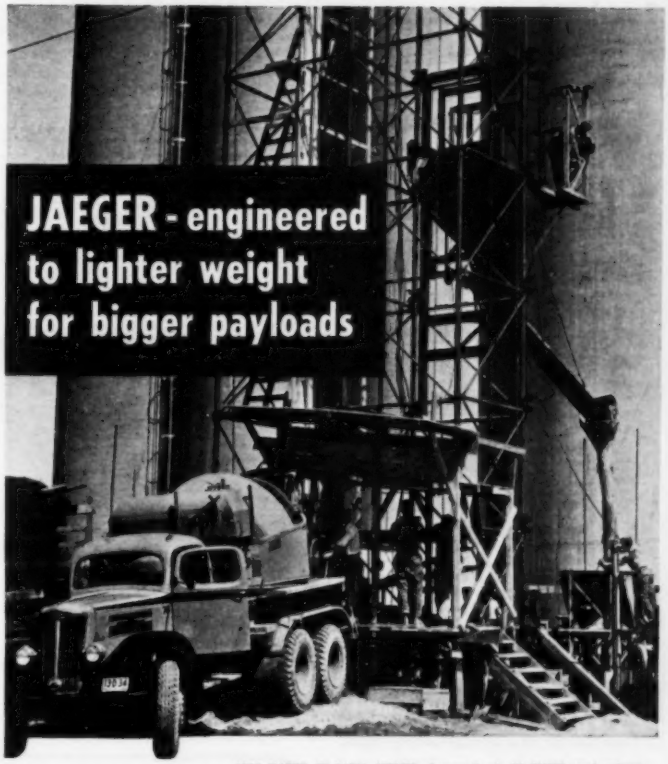


gear reduction unit driven from the master transmission by a universal joint. Planetary reverse gearing and large, spring-loaded clutches, running in oil, give smooth starting and reverse discharging. The drive provides two discharge and two mixing speeds.

The drive is available for any model of Blaw-Knox, Smith, Jaeger, Rex, or Ransome mixers. Choice of engines is also provided.

● Concrete Staves

Neff & Fry tornado-resistant silos owe their solidity to the character of the concrete staves and galvanized steel rods which go into these structures. Molded under hydraulic pressure of approximately 140 tons, the concrete used in the staves is later cured to effect complete crystallization. According to Pittsburgh Testing Laboratory tests, Neff & Fry Super-Concrete has been found to have a crushing strength of 6,163 to 6,650 p.s.i. in saturated condition; 6,625 to 8,250 p.s.i. in dry condition as received. The absorptive capacity of the staves is only 6.2 percent to 7.4 percent. These units are guaranteed to have 5,000 p.s.i. crushing strength after 28 days. They

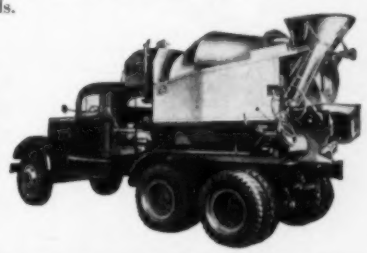


6000 YARDS IN 168½ HOURS: Jaeger 3 yd. HI-DUMP truck mixers (6 by day on a 5-mile haul, 10 each night on 8-mile haul) made this continuous pour without a hitch on 1,200,000 bushel bin addition to grain terminal near Canal Winchester, Ohio.

Latest payload-producing Jaeger HI-DUMPS weigh 600 to 1600 lbs. lighter. Yet, because they're engineered (not stripped) for weight-saving, they are more rugged, require 50% less maintenance than former models. No change in heavy gauge of drums and blades — but revolutionary improvements as well as weight-savings in Jaeger's latest 2-speed "unit" transmission, "spider" drum drive and self-aligning hopper with self-lubricating, leak-proof seal.

Faster, too — 10 seconds per yard to end-load dry materials with new hopper and 24 rpm drum "charging" speed, distribute batch water at rate of 100 gpm, and discharge a yard of 4" slump concrete in 20-25 seconds, 1" slump in 60 seconds.

2-3-4½-5½ YD. SIZES
End-Loader or "Sealed Drum" Top Loader Types. Fluid drive (if you want it). Truck engine drive if desired.



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VENTO

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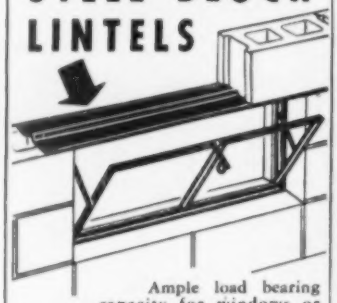
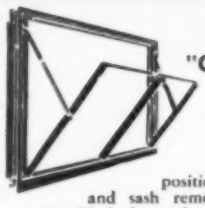


Ample load bearing capacity for windows or doors. Available from 2-ft. 6-in. to 5-ft. Formed from 10 gauge hot rolled steel with stiffening crimp in center. Beveled edge provides masonry bond and seat for mortar. Saves costs through use with standard 8-inch blocks. Vento pressed steel angle lintels for brick construction also available.

VENTO STEEL BASEMENT WINDOWS



VENTO "CHAMPION"

Three sizes. Effortless operation gives three position ventilation and sash removal. Double contact with leak-proof water-shed sill stops wind and rain. 14 gauge electric welded frame. Fins welded to jambs for easy installation in block or poured walls.

VENTO "THRIFTY"

A real economy window for lower cost housing. Three sizes, sturdy construction, smooth operation, two position ventilation and easy sash removal. Fin flanges at jambs for quick installations.

***Also** casement, utility and barn windows. Write for full information.*

VENTO STEEL PRODUCTS CO., INC.

254 COLORADO AVE. BUFFALO 15, N.Y.

are 2½ in. thick, 10 in. wide, and 30 in. long.

To withstand interior pressure, the walls of the silos are bound with hoops of galvanized open-hearth steel rods ½ or 9/16 in. in diameter. Each end is upset to give the body of the rod full diameter after threading. Lugs are heavily galvanized, and the nuts fit closely. Because of the special design, Neff & Fry lugs exert uniform stress on each of the hoops.

● Backfill Blade

A backfill blade attachment for the 3/8-cu. yd. Schield Bantam trench hoe enables this machine to add to the tasks it performs, according to the manufacturer, the Schield Bantam Company, Waverly, Ia.

The backfill blade is 24 by 60 in., with a ½-in. reversible cutting edge. The blade is mounted on a wishbone dip stick with tubular control arms that keep it vertical to the ground as it is pulled toward the machine. The "dozer" action and the mechanical controls cause the blade to roll dirt back into the trench. It is rapidly and easily changed.

Faster charging, due to open top stationary drum

Mixing while loading with visible control

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REAR and SIDE DISCHARGE reduces delay on arrival at job.

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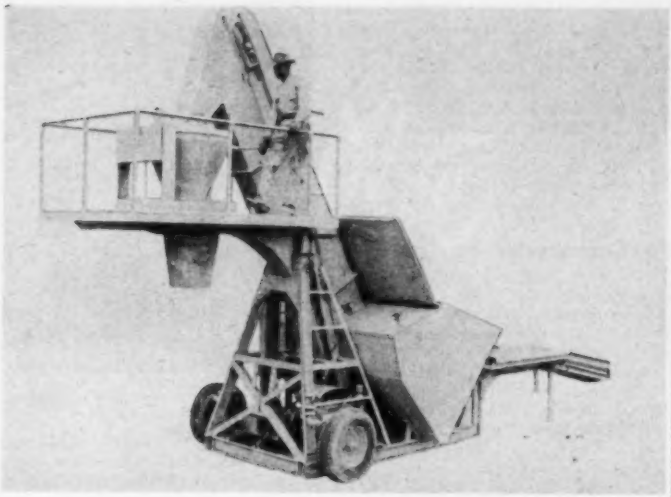
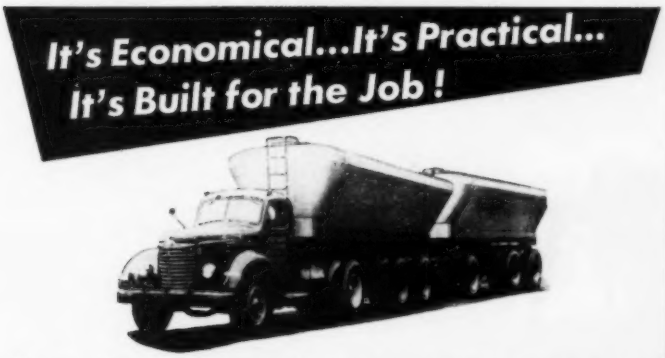


● Portable Cement Batcher

A bulk cement batcher that is easily portable is now being manufactured by the Shovel Supply Company, Box 369, Dallas, Tex. The "Ferguson" cement batcher has capacity for a dual-drum paver, up to 12 cu. ft. per batch, and will handle bulk cement either at the freight car or on the job.

Accurate scales and controls on the Ferguson batcher are located for handy operation by one man. The entire apparatus is water-tight and the bin can be locked. Power is provided by a 16 hp., 4-cylinder engine, complete with totally enclosed gear reduction clutch and 4-speed transmission.

The batcher can be set up ready for work in 5 minutes by rotating the elevator around the center pin into working position, then retracting the wheels mechanically and setting up ramps for



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Twin screws give fast action . . . covered with special air cells for easy starting and high speed discharge. Equipped with powerful motor . . . all controls conveniently located on outside of body. Simple . . . positive . . . immediate.

Write for full details on the Baughman Line of transport bodies and conveyors.

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LOOSEN IT UP WITH CLEVELAND AIR VIBRATORS
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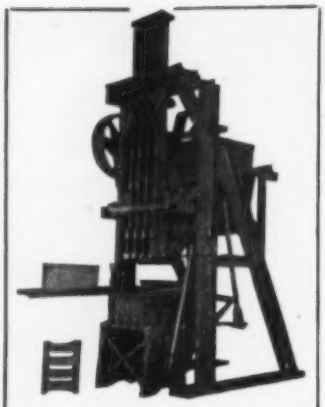
THE CLEVELAND VIBRATOR COMPANY
2807 Clinton Ave. - Cleveland 13, Ohio



An All-Purpose Machine

The Junior Stripper will turn out more blocks per man than any other hand-operated machine on the market . . . 300 per hour being easily maintained! Nor has quality of output been sacrificed for the sake of speed. Units are uniformly dense, true to shape, of uniform texture.

Stearns Clipper Stripper Machines; Stearns Jolterete Machines; Stearns Mixers; Cast iron and press steel pallets. Straublox oscillating attachments, etc. Repair parts for: Anchor, Stearns, Blystone Mixers and many others.

ANCHOR CONCRETE MACHINERY CO.
G. M. Friel, Manager — Columbus, Ohio

the loading truck. When used at the freight car, the ramps are not needed; the intake bin is placed at the proper height for receiving bulk cement from the box car by means of a front dump tractor or by hand unloading.

The unloading ramp forms a gooseneck for attaching to the fifth wheel of a truck, or the batcher can be towed behind an ordinary dump truck. Its overall height in trailing position is 12½ ft.

● Waterproofer

Progressive Enterprises, 1001 N. Vermont Avenue, Los Angeles 27, Calif., has developed a clear liquid waterproofing material for use on concrete, plaster, stucco, brick, and other surfaces, to combat weathering.

Applied with a brush or with a low-pressure garden-type spray, "Lipton All-Seal Waterproofing" is said to cover from 200 to 350 sq. ft. per gallon. It is transparent and leaves no after stain.

Filter Floor Block Developed By Two Seattle Concerns

At Centralia, Wash., an interesting new type of filter floor block has been utilized in the city's sewage treatment plant. The unit, designed to serve as a floor or a support for the filter bed, was placed on the market by the Graystone Concrete Products Company of Seattle.

According to R. W. Condon, Graystone sales manager, the units have been

● Filter floor of sewage plant at Centralia, Wash., showing new type of block.

well received by engineers and designers of treatment plants. Installations similar to the one at Centralia have been made at Colville and Tekoa, Wash. The block was originated by Carey-Kramer & Associates of Seattle, with Graystone engineers collaborating.

Purchase of the Brikcrete Masonry & Supply Company of Nampa, Idaho, by Kolbo & Son was announced recently. The Brikcrete plant, located east of Nampa on Highway 30, manufactures a complete line of concrete building brick.

Complete Satisfaction

"... it has given trouble-free performance."

"... we are more than pleased and can speak only too high for your equipment."

"... we can produce more tons, per man, on your machine than any competitive one we know."

"... off-bearers can not keep pipe away from the machine."

"... Men come from other plants to work on the Dixon machine."

"... no pipe failures in four years ..."

Ask the men who use them ... and they'll tell you that Dixon Concrete Pipe Machines are the fastest pipe makers, the biggest money makers in the business. The records speak for themselves.

(Illustrated) Dixon Model "C" Hydraulic Pipe Machine, for 4" to 18" B & S, 6" to 18" T & G, 3 and 4' Joints Adaptable to 18" grease traps. Write for complete information.

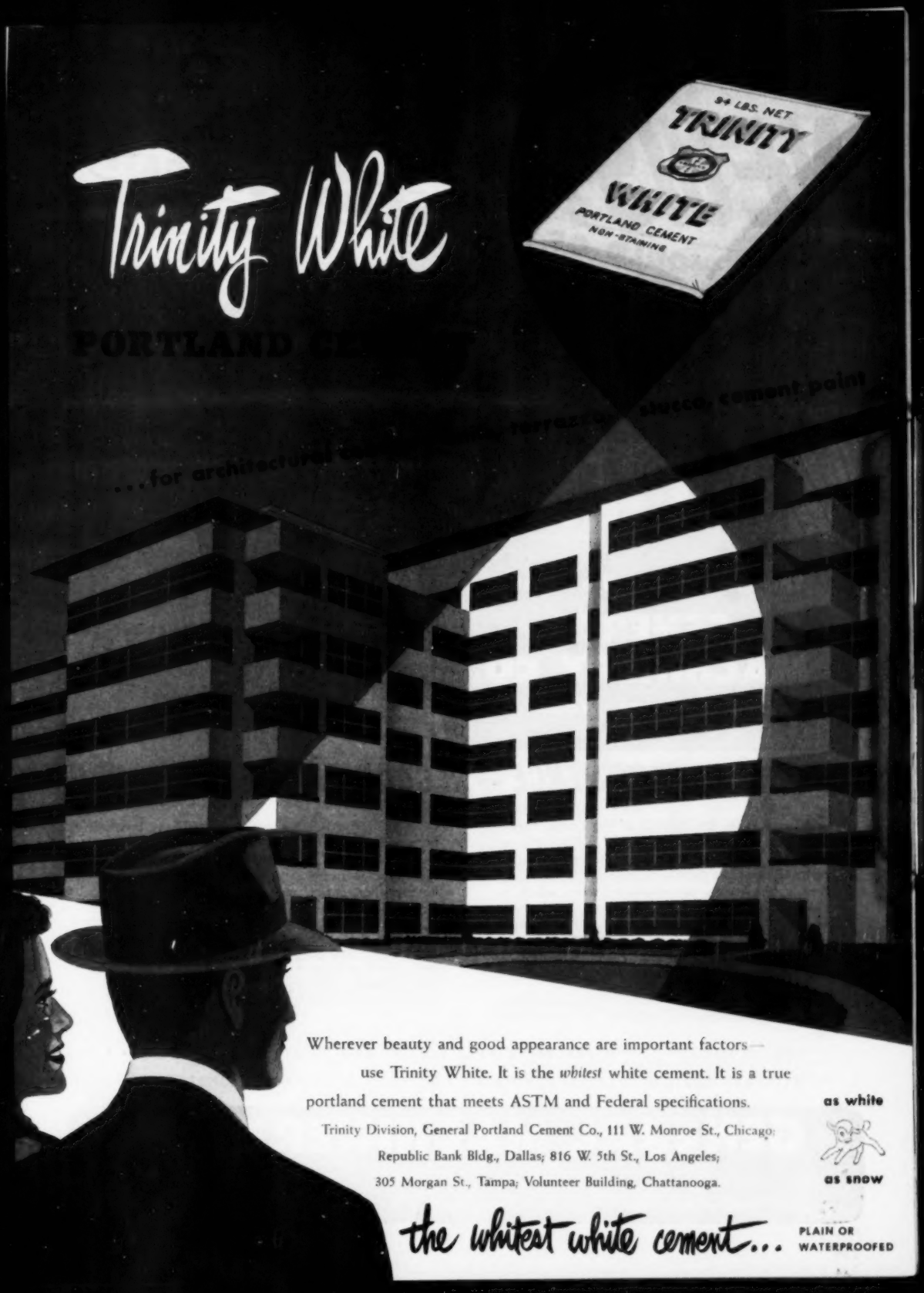
Names of these enthusiastic users of Dixon Pipe Machines will be furnished upon request.

HOUSTON CONCRETE MACHINERY CO.
Office and Mailing Address: 116 Heights Blvd. HOUSTON, TEXAS
Plant: 6600 Washington Ave.

Manufacturers of:

Dixon Concrete Machinery

Dixon Pipe Machines — Septic Tank Forms
Pipe Bend Machines — Dixon Conveyors
Dixon Mixers — Off-Bearing Carts


Trinity White
94 LBS. NET
TRINITY
WHITE
PORTLAND CEMENT
NON-STAINING
Wherever beauty and good appearance are important factors—
use Trinity White. It is the *whitest* white cement. It is a true
portland cement that meets ASTM and Federal specifications.
Trinity Division, General Portland Cement Co., 111 W. Monroe St., Chicago;
Republic Bank Bldg., Dallas; 816 W. 5th St., Los Angeles;
305 Morgan St., Tampa; Volunteer Building, Chattanooga.
as white
as snow
the whitest white cement...
PLAIN OR
WATERPROOFED

NEWS!

IN THE WORLD OF LIGHT-WEIGHT AGGREGATE

A NEW STAND-OUT

The Modern Haydite Plant by

GENERAL MACHINERY CO.

of Spokane, Wash.

credits a new success to

Smithwick Concrete Products

in Portland, Oregon

PROVEN IN EXPERIENCE -- RECOGNIZED IN RESEARCH

BASIC and NEW INDUSTRIES of the Pacific Northwest know GENERAL MACHINERY COMPANY of SPOKANE as a progressive, productive source for machinery needs. GEMACO experience is recognized in the widely diversified industries which include mining, lumbering, highway, agriculture, processing of all kinds and light metals. GEMACO has pioneered creation of new equipment with pace-setting efficiency, first for heavy, and now for light-weight aggregate operations.

SMITHWICK CONCRETE PRODUCTS is equipped with GEMACO-fabricated ROTARY KILN, ROTARY COOLER, ELEVATORS and CONVEYORS of revolutionary design. The kiln, 100 feet long by 8 feet diameter, is the largest in this industry . . . as is the 50-foot long by 5½-foot diameter rotary cooler. Both are advancing new, important standards for higher production, less shut-down time and significantly lowered costs.

Light-weight aggregate operators throughout the U.S. are invited to inquire about costs and prospects of our company supplying this new and proven equipment to light-weight aggregate plants everywhere.

FOR 40 YEARS . . . A LEADER IN FABRICATION AND SUPPLYING ENGINEERED ORIGINAL CUSTOM CREATED EQUIPMENT FOR PACIFIC NORTHWEST INDUSTRIES

GENERAL MACHINERY CO.

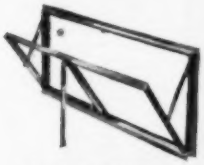
SPOKANE, WASHINGTON

E. J. SIMONS, PRESIDENT — H. I. GUSTAFSON, VICE PRESIDENT AND SALES MANAGER

kewanee BUILDING PRODUCTS

SOLD THROUGH DEALERS ONLY

Quality-Built for Quality Building



ALUMINUM BASEMENT AND UTILITY WINDOWS
Latest addition to modern building, combining beauty and long life. No upkeep, no repainting, no rusting. All aluminum construction. Cam latch assures tight fit.

KEWANEE MASTER STEEL BASEMENT WINDOW
The finest basement window on the market. Weather-tight, with exclusive controlled ventilation feature. Vents easily removed. Putty-puttyless glazing. Screens and storm sash available.

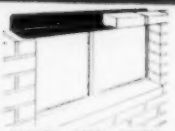
STANDARD BASEMENT WINDOW
Tight-fitting window, competitively priced. Putty-puttyless glazing. Screens and storm sash available.

COMMERCIAL STEEL WINDOW
Ideal for garages, shops, smaller commercial and industrial buildings. Vertical mullion bars available for combining in groups. Putty-puttyless glazing. Screens available.

STEEL UTILITY WINDOW
There is an excellent market for this fine window. Widely used in garages, filling stations, and miscellaneous small buildings. Constructed of heavy rolled sections. Putty or puttyless glazing.

LARGE COMMERCIAL STEEL WINDOW
A larger window for commercial or industrial use. Two vents; heavy, hot-rolled sections. Screens available. Mullion bars to combine window in groups.

BASEMENT COAL CHUTE
Made of steel and guaranteed against breakage. Locks securely. Door is tight-fitting. Slotted hinges hold it open during coal delivery.



FORMED STEEL LINTEL
Kewanee Lintels are formed of heavy 10 gauge steel, have ample load-bearing capacity. Edges beveled to provide good masonry bond.

FLUE CLEANOUT DOOR
Convenient, strong, inexpensive. Unbreakable hinges furnished with strap anchors for positive anchorage.

FIREPLACE ASH DUMP
Double-doors for automatic dumping action. Tight-fitting when closed to prevent ash dust from re-entering room. Standard firebrick size.

OTHER KEWANEE BUILDING PRODUCTS
Portable Chutes for Handling Ready Mixed Concrete • Coal Hole Rings and Covers • Bell Trap Cesspools • Cistern Rings and Covers • Cast Iron Ventilation Grates • Sewer Tile Strainers • Brick Carriers • Adjustable Flue Thimbles • Built-In Adjustable Mail Chutes • Window Wells • Standard Industrial Windows.

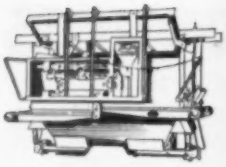
STEEL MORTAR BOX
Smooth interior — no joints, seams or rivets. Formed from single sheet of rust-resistant steel.

NEW STEEL FLITE BIN-VEYOR
For Retail Coal Deliveries
Steel flight construction permits delivery at higher elevations. Low first cost and low maintenance cost. Weighs only 230 lbs. Write for descriptive folder.

Kewanee's precision-built products assure dealers of worthwhile profits, and the return business of satisfied customers. Write for full details on prices, dealer discounts.

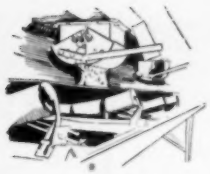
kewanee MANUFACTURING COMPANY
151 Burlington Avenue, Kewanee, Ill.

TO GET THINGS DONE IN '51— SEE BUTLER BIN



WEIGHING BATCHERS

New standards of accuracy and efficiency from a roadbuilders batcher to completely automatic, recording weighing batchers for high production ready mixed concrete operations.



BUTLER BIN GATES

Bin gates are subject to heavy wear. Keep extras on hand to avoid shutdown. BUTLER makes them in rotary, clamshell, roller and radial types.

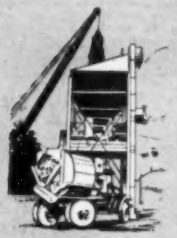
CENTRAL MIXING PLANTS

BUTLER PLANTS are widely recognized as examples of brilliant engineering in a great variety of materials handling problems. Here the experience of the BUTLER Engineer is invaluable.

1951 will be a year of action and unprecedented production. The highway program is expanding at an accelerated pace. Demand for Ready Mixed Concrete is climbing week by week for building construction is still far behind the nation's requirement.

Production schedules such as these mean modern equipment—and modern equipment means BUTLER and BUTLER *Engineered Design.*

In your plans for new plants—or for modernizing existing equipment "to get things done in '51" it's the soundest of common-sense to consult the BUTLER engineer.

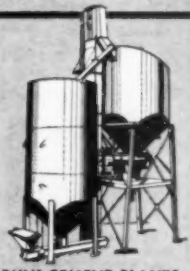


READY MIXED PLANTS

Ready Mixed Concrete Plants for every production level — engineered by BUTLER for the highest efficiency and lowest cost operation.

AGGREGATE PLANTS

Highly portable, quickly erected, BUTLER Aggregate Plants save time and money in meeting high pressure paving schedules.



BULK CEMENT PLANTS

A wide range of capacities for every roadbuilding job. Faster batching, spill-pound accuracy. Shown is the CR-37-58 providing 650 bbls. capacity.

BUTLER BIN CO.

987 BLACKSTONE AVE.

WAUKESHA, WISCONSIN

CEMENT AERATOR

Compressor, engine, pump and complete controls all in one compact, space-saving unit. The BUTLER CEMENT AERATOR is essential to a smooth flow of cement.

CONCRETE PRODUCTS PLANTS

BUTLER engineers have an international reputation for highly efficient design in Concrete Products Plants. BUTLER offers an engineering service that assures a maximum profit.

THE NEW BUTLER '102' SCOOP

Faster forward travel (11 miles an hour), a turning radius of only 6'3", the new BUTLER '102' is tops in maneuverability and efficiency.

BIN LEVEL INDICATOR

A new BUTLER development, a truly trouble-free, positive, accurate Bin-level Indicator. Works successfully with a great variety of materials.

...and NOW...The KENT continuous VOLU-MIXER

GIVING RESULTS NEVER BEFORE ATTAINED!

PAUL C. RIEFLER

Hamburg, N.Y.
November 13, 1950

Kent Machine Company
Cuyahoga Falls, Ohio

Att: Mr. A. G. Walker, Vice President.

Dear Mr. Walker:

I know that you will be interested in the performance of our new continuous mixer after seven months of operation using celocrete, cinder, sand and gravel aggregates supplying material to make 900 - 8x8x16 equivalents per hour.

This mixer is well suited for mixing the lightweight materials because it has adequate capacity for pre-wetting and long thorough mixing (over ten minutes).

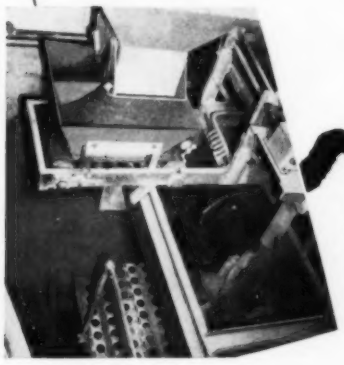
Our plant foreman, Mr. Griffin, likes the ease of adjustment in handling different aggregates and its accuracy of cement ratio, especially when materials vary as to weight or volume. The mixer is almost automatic in its continuous operation. It is clean, quiet and from our observations so far, maintenance will be at a minimum.

From our experience with continuous mixing, we feel that this mixer will easily handle material in the coldest weather without trouble of frozen material in the blocks.

Very truly yours

Paul C. Riefler

Paul C. Riefler.



Showing feeder hoppers, cement feed screw and mixing trough.

ENDORSED by...

one of the country's most practical and progressive block manufacturers . . .

- Here's the biggest and greatest thing yet in a continuous mixer—a logical development of KENT Mixers so popular for many years.
- It has a trough 36 inches in diameter with other parts proportionally large—capacity to serve the largest block machines—and features that adapt it to the varying needs of all aggregates.
- The mixing period can be varied from 5 minutes to as long at 15 minutes. It's ideal for every need including all popular light aggregates.
- When Paul Riefler endorses it you may be sure it is a machine of exceptional merit. Read his letter—then write for details regarding this new Volu-Mixer or other Kent continuous mixers for medium and small plants. Look for it at the Concrete Industries Exposition. Booths 49, 50, 85 and 86.

Please Send literature describing The KENT VOLU-MIXER and other continuous Mixers.

Company_____

Address_____

City_____

Attention of_____

The KENT MACHINE CO. CUYAHOGA FALLS OHIO

FRANK P. SPRATLEN, JR.,
PRESIDENT OF THE
READY-MIXED CONCRETE CO
AND PAST PRESIDENT OF
THE NATIONAL READY-MIXE
CONCRETE ASSN., SAYS:

Pro

Specify . . . Alw

"We have used Protex in thousands of yards of concrete, with excellent results."

Frank T. Spratlen Jr.

thousands of plants all over the world, like e Ready-Mixed Concrete Company, shown re, Protex now means a finer, more durable oduct...at less cost!

READY MIXED CONCRETE COMPANIES

Amazing increases in placeability, handling, durability are the result of using Protex concrete. You—and your customers—get greater output, reduced costs—with Protex Air Entraining Agent. Protex cuts contractors' placement costs, overtime. Its billions of tiny "ball bearings" of air literally roll the concrete into place. It reduces bleeding, segregation...resists freezing, thawing, alkali attack, cracking, spalling...concrete is more than 700% more durable! Protex earns more profits for you—protects your customers!

BLOCK PLANTS

It pays to make a better block—with Protex—for lower production costs...higher consumer acceptance. Protex prevents gummy deposits in machines...cuts costly overtime...produces slicker, more water-proof blocks with a richer appearance, fewer green breakages, crisp, sharp edges that resist the wear of time and weather. Protex is recognized and proved as an essential money saver. It costs less—only a fraction of a cent per sack of cement!

•

AUTOLENE LUBRICANTS CO.

1345 W. Evans Ave.—Denver, Colo.

tex

y...PROTEX Air Entraining Agent!

AUTOLENE LUBRICANTS CO.
1345 W. Evans Ave., Denver, Colo.

Please rush a copy of your free booklet, "Facts on Modern Placement of Concrete through Air Entrainment."

Name _____

Address _____

City _____ State _____

change to challenge in '51...
...the leader!

GIVES YOU MORE CUBIC FEET OF DRUM SPACE PER DOLLAR...

CHECK THIS CHART
make your own comparison

COMPARE THE COST! COMPARE THE CUBIC FEET OF DRUM SPACE!

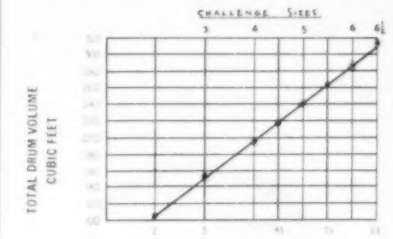
. . . of the Challenge with ANY other mixer . . . you'll readily see why you get far more for your money with Challenge, **the leader.** For example, using the same curve standards set forth by the Truck Mixer Manufacturers Bureau, the 1951 model Challenge 5 yard mixer has 241 cubic feet of drum area . . . 24 cubic feet MORE than competitive 4½ yard machines . . . yet the Challenge sells for hundreds of dollars LESS! . . . weighs many hundreds of pounds LESS!

These outstanding Challenge features are accomplished without sacrificing quality in any way . . . metal used for Challenge drums, for instance, is of the same thickness, or greater, as that used for all other major mixer drums. The Challenge Mixers are completely new . . . not old-fashioned mixers made over or stripped down . . . but carefully engineered and streamlined for maximum working efficiency, using rugged, lightweight, high-tensile steel throughout.

In four short years Challenge has become the leader in the truck mixer field . . . **imitated by ALL other major truck mixer manufacturers** . . . clip the coupon below, get detailed information, including prices and name of the dealer in your area. Make arrangements for a demonstration of the 1951 Challenge on your toughest pour of either high or low slump concrete.

COMPARISON CHART

DRUM VOLUME OF CHALLENGE MIXERS TO NRMCA SPECIFICATIONS



TRUCK MIXER MANUFACTURERS BUREAU STANDARDS

Change to Challenge in '51 . . . We invite your most careful comparison. On display at the Concrete Industries Exposition, Cleveland, Ohio, Jan. 22-25, Booths Nos. 51-52-53-54.

Challenge patented Blade Design Prevents Spillage Without Using the Seal.

Cook Bros. Equipment Co.

Please send me complete information on the 1951 Challenge Mixer, together with prices and the name and address of my nearest Challenge dealer.

NAME _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

COOK BROS. EQUIPMENT CO.
EXCLUSIVE NATIONAL DISTRIBUTORS FOR
CHALLENGE
the modern, streamlined truck mixers

1815 N. Broadway, Los Angeles 31, Cal. Phone CApitol 2-9111

Look! NO RING GEAR, SPROCKET, OR BEVEL GEAR

TRANSO Model D-51 Transmission is patented. Other patents pend.

TRANSO TRUCK MIXER DRIVE
Available As Original Equipment Or Replacement

The TRANSO D-51 Truck Mixer Drive is coupled directly to the mixer drum through a large universal joint spider eliminating ring gears, sprockets, and bevel gears. Planetary reverse gearing and large, spring-loaded clutches, running in oil, provide extremely smooth starting and discharge reversing. This design virtually eliminates adjustment and maintenance cost, increases time on the job, and improves earnings. Added features include: Two mixing and two discharge speeds, built-in water pump with separate enclosed spring-loaded clutch, lighter weight, simple installation, economical first cost. Fits all models and sizes Blaw Knox, Jaeger, Smith, Rex, and Ransome Mixers. Available with fluid coupling or TRANSO Torque Converter and your choice of engines. WRITE for full information.

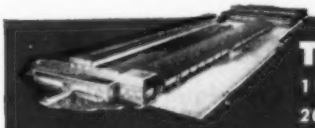
MODEL MH-45-D-50

TRANSO REPLACEMENT TRANSMISSION

Sold on an exchange basis for all old model Jaeger transmissions. Has clutches mounted on independent ball bearings. Attractively priced. Patent No. 2443313. Service parts available.

DISTRIBUTORS

Some territories are open. If you are qualified, write to us for details on our franchise.



THE TRANSMISSION & GEAR CO.

10421 HAGGERTY AVE. • DEARBORN, MICH.

20 YEARS EXPERIENCE BUILDING TRUCK MIXER TRANSMISSIONS

100-TON Guaranteed Concrete TESTING MACHINE

Love at first sight!

Judging by the inquiries and orders which have been coming in at a steady and accelerating pace, the idea of "on-the-spot testing" with a Yoder compression testing machine has struck a responsive chord in the hearts of realists among products manufacturers. In fact, considering this is a brand new idea and a brand new machine, it looks like a case of love at first sight.

Everybody loves a bargain, and any machine which pays for itself, like this one does, from three to six times every year, must be an extraordinary bargain. Especially when the first—and virtually the last—cost is only $900.00.

Send for brochure, illustrating and explaining the many practical advantages of this machine. It shows not only direct savings, but how it helps avoid disputes with customers and bring about better control of quality through every manufacturing step.

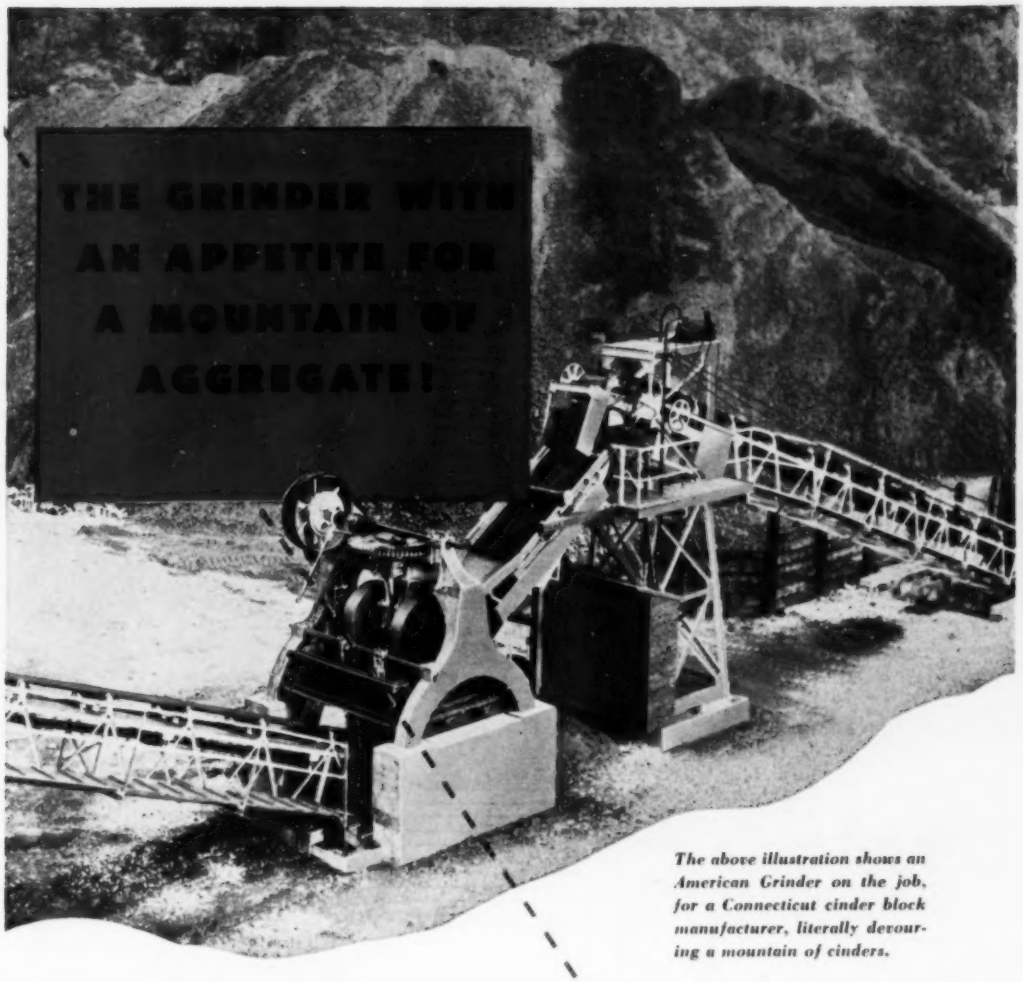
See demonstration of this machine in Cleveland, at the Show, January 22-25. Booths 1, 2, and 3.

ENGINEERING YODER MANUFACTURING

Concrete Machinery Division

THE YODER COMPANY

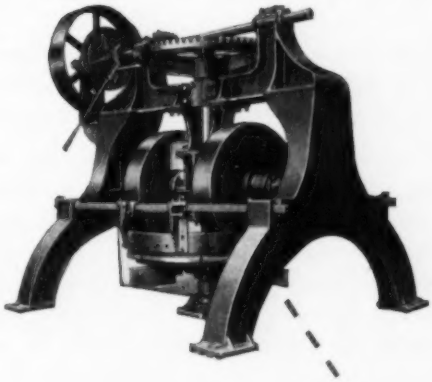
5552 Walworth Avenue • Cleveland 2, Ohio



The above illustration shows an American Grinder on the job, for a Connecticut cinder block manufacturer, literally devouring a mountain of cinders.

Want big-volume aggregate production?
. . . then get all the facts about the "American" Grinder that lives on a steady diet of a mountain of aggregate . . . and does the job right . . . for perfect block production, with minimum maintenance cost. Cinders, Pumice, Slag, Burned Clay and Shale, and many other products of quarry and mine.

Select from 8 sizes to meet your production needs.

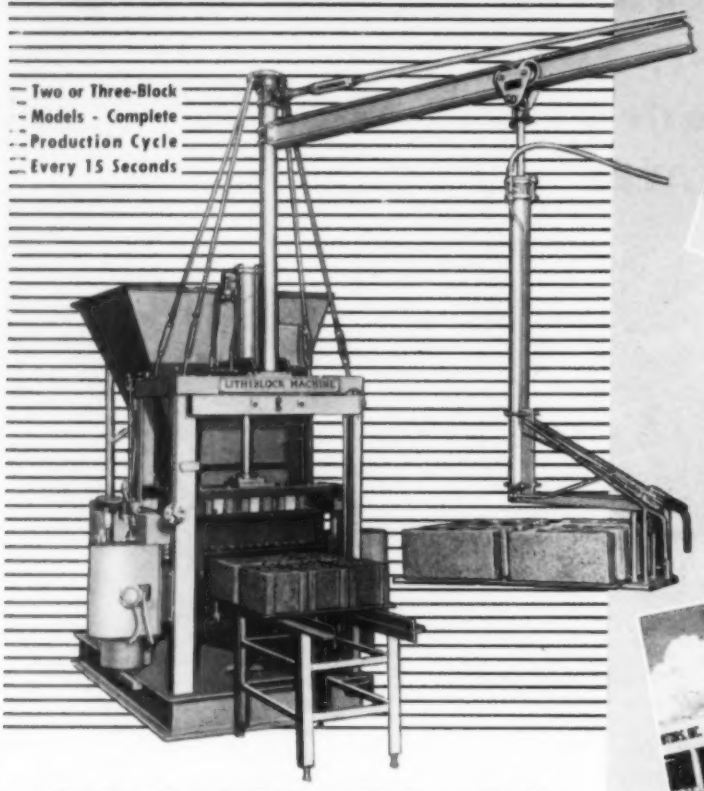


THE W. A. RIDDELL CORPORATION

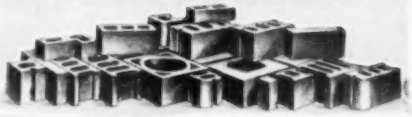
BUCYRUS • OHIO

LITH-I-BLOCK

The Talk of the Industry



FITS THE AGE



GET SET TO GO

These are critical times when you'll most appreciate the advanced features of the Lith-I-Block production unit — not only for the way it works, but also for the product it makes.

It's the one machine that is engineered for 100%-vibratory production, with everything done in measured sequence by trouble-free automatic means. Cuts the labor cost, cuts the cost of wear and tear, cuts the cost of pallets — and gets more block per sack of cement! The best of block, too — the kind that are processed uniformly under 100% vibration — the kind that architects, contractors, masons, and builders go out of their way to ask for.

Now is the time to get set with Lith-I-Block for the demanding days ahead. Get set with the times, get set with Lith-I-Block.

LITH-I-BAR COMPANY

HOLLAND · MICHIGAN **DEPT. CM-I**

BIG PAY LOADS
that stay within weight limits

New Smith 6½ Yard LOADLIMIT Model. 8½ Yards as Agitator.

- ★ Has Approved NRMCA Rating
- ★ Carries Full Rated Load
- ★ Stays Under Highway Weight Limits
- ★ Low Initial Cost
- ★ Low Operating Costs
- ★ Easily Convertible to a Standard Smith-Mobile

WITH SMITH *LOADLIMIT* MODELS

You can haul BIGGER PAYLOADS at *less cost per yard* with new Smith LOADLIMIT Model Truck Mixers. These dependable machines are the same as standard Smith-Mobiles with a few unnecessary parts removed . . . parts you can readily sacrifice in favor of lighter weight. When the mixer is mounted on the proper truck, the entire unit stays within the weight limitations of most states. The LOADLIMIT models have the well-known Smith-Mobile sturdy construction and performance. Lightweight? Yes — but not too light for tough, everyday service. Available in ALL Truck Mixer sizes . . . 2, 3, 4½, 5½ and 6½ yards. All carry approved NRMCA rating plates. And all can easily be converted to standard Smith-Mobile models. Get the facts! Write for Bulletin No. 247.

The T. L. SMITH COMPANY
2887 N. 32nd St., Milwaukee 45, Wis., U.S.A.

SMITH MOBILE

For BIGGER and BETTER Concrete Mixers and Truck Mixers Look to SMITH

A 5883 1P

GIVE YOUR BUSINESS A LIFT" with an *Erickson*

Erickson "Custom-Built" F-5 with additional lift. Dual heavy duty tires for soft yards. Capacity 5000 lbs.

Every Truck "Custom-Built" . . . for the Customer's Needs

Erickson Model F-5
(Capacity 5000 lbs.) shown with detachable scoop. Fits any Erickson fork model.

Erickson Model F-6
with standard wheels, forks and lift. Capacity 6000 lbs.

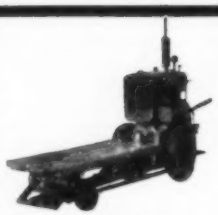
See Us at Booth 134-153

N.C.M.A. CONVENTION

Cleveland, January 22-25, 1951

Erickson Model F-16

Capacity 16,000 lbs. Shown with boom attachment and utility forks for your pipe work. Supplied with any style forks. Other pipe handling models with 6000, 8000 and 10,000 lbs. capacity.



Erickson Platforms
Model P-5, 5000 lbs.
Model P-6, 6000 lbs.
Handles all racks.

Erickson
POWER LIFT TRUCKS, Inc.
1403 MARSHALL ST. N. E.
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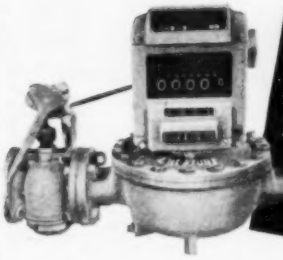

NEPTUNE AUTO-STOP METERS

ACCURATE WATER CONTROL —*Automatically*

Accurate Auto-Stop meters are the quickest, most dependable way to control water in ready-mix batches. Just push buttons to set the quantity, open the valve, and the Auto-Stop does the rest. It automatically shuts off when the correct amount is delivered. Saves work, speeds loading. Large, easy-to-read numerals. Sturdy, weatherproof register has emergency stop, quick resetting, and totalizing features. Sizes for all ready-mix plants. Write for quick facts, or phone our nearest branch.

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Sand and Gravel Store Best-

Handle Easiest- in a MARIETTA

The indestructible combination of concrete reinforced with steel makes a MARIETTA storage system rugged enough to handle heavy materials like sand and gravel. Its air-tight interior keeps out all traces of moisture. Special construction features, including well planned chutes, make filling and handling easy.

These systems are flexible enough to be tailored to your volume requirements. They are quickly and carefully erected by our own crews. They are often ready for filling within a week after order is received.

Write or wire our nearest office for full information.

The MARIETTA Concrete Corporation
MARIETTA, OHIO

Branch Offices:
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Box 1575 Charlotte, N. C. [redacted]

Opening the way to Greater sales of CONCRETE MASONRY

OTHER THINGS being equal, people usually buy where they get the warmest welcome. That's why it pays to make friends and create good will among customers and prospects.

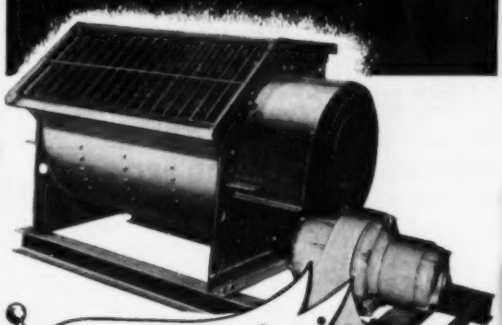
Progressive concrete masonry manufacturers have found that one of the most effective ways of doing this is to hold an annual "open house" at their plants. Such an event is an excellent opportunity for making friends—and building business.

Be sure your guest list includes contractors, builders, real estate men, officials of banks and lending agencies, newspaper editors, architects, engineers and businessmen in your area. They will find a visit to your plant enlightening and you will have a chance to tell them of the advantages of concrete masonry construction.

Staging special promotions like this is an effective way to supplement the three essential steps in developing more business: (1) making block that complies with ASTM and Federal specifications for moisture content, strength and water absorption, (2) keeping a list of quality concrete masonry buildings in your community from which you can select examples to show prospects and (3) furnishing prospects with names of architects and builders who can be depended on to design and build quality concrete masonry structures.

PORTLAND CEMENT ASSOCIATION
33 W. Grand Avenue, Chicago 10, Illinois
A national organization to improve and extend the uses of portland cement and concrete . . . through scientific research and engineering field work

KELLEY MIXERS



FOR 20 YEARS . . .

still the "FIRST" family!

Over the years Kelley engineering and craftsmanship have made the Kelley Mixer the touchstone of dependable and efficient mixer performance. In plant after plant Kelley Mixers are setting production records . . . under the most grueling day-in and day-out production conditions. They all report—*a maximum of service—a minimum of maintenance!*

We also specialize in the design and fabrication of custom built units from a single machine to a complete plant.

MEET THE KELLEY MIXER "FAMILY"

KELLEY **60-S MIXER** . . . . 60 cu. ft. capacity
KELLEY **30-D MIXER** . . . . 30 cu. ft. capacity
KELLEY **20-T MIXER** . . . . 20 cu. ft. capacity
THE NEW KELLEY 12-T MIXER . . . 12 cu. ft. capacity

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WITTEMANN MACHINERY CO.
SUCCESSORS TO E. B. KELLEY CO.
FARMINGDALE NEW JERSEY

Concrete Pipe Machinery Co.

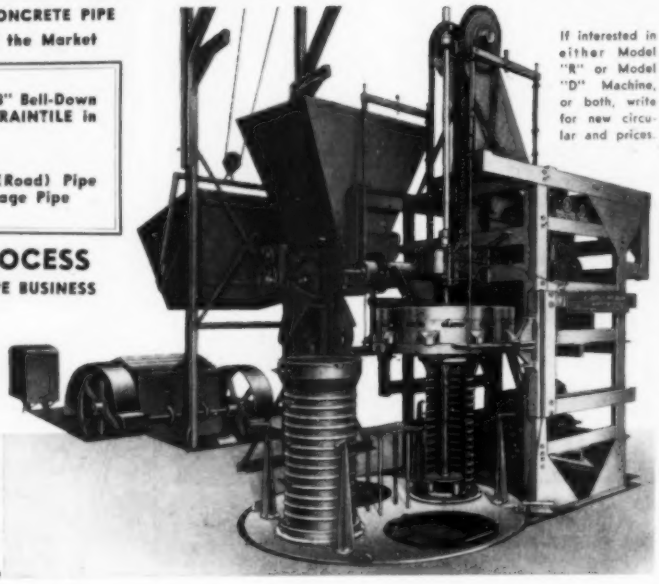
MODEL "T" BELL-UP "McCRACKEN" MACHINE

With 40 cu. ft. mixer and skip-loader to serve machine

FOR MAKING PLAIN AND REINFORCED CONCRETE PIPE
Range of Sizes — 4" to 36" — 80% of the Market

ALSO MAKE MODEL "R" — Sizes 4" to 18" Bell-Down Machine. MODEL "D" Makes Butt-End DRAINTILE in 1 or 2 ft. lengths. Sizes 4" to 16.".

USES FOR CONCRETE PIPE
Storm & Sanitary Sewers • Culvert (Road) Pipe
Irrigation (T&G) Pipe • Farm Drainage Pipe



If interested in either Model "R" or Model "D" Machine, or both, write for new circular and prices.

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LEADS THE WAY TO MORE PROFITABLE PIPE BUSINESS
Eight-Hour Shifts Produce:

SEWER
Plain B & S Pipe
2400 feet — sizes 4" to 10"
1750 feet — sizes 12" to 18"
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Reinforced T & G Pipe
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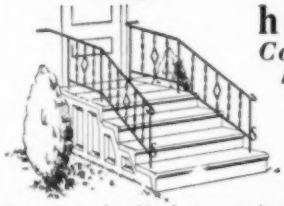
A "FORD" MIXER IS HARD TO BEAT.

FORD CEMENT BLOCK MACHINE CO.
CEDAR FALLS, IOWA

Now **90** *LICENSED MANUFACTURERS Producing*



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Concrete STEPS

A Small Investment That Pays Big Dividends

Homeward all metal forms are precision built to produce a product that requires no hand finishing

The exclusive franchise for your territory may still be open.
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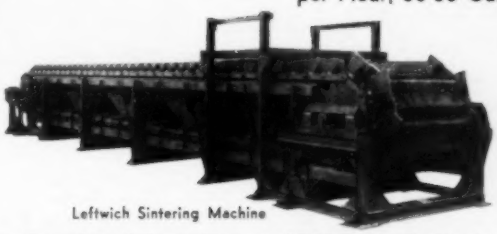

Leftwich Sintering Machine

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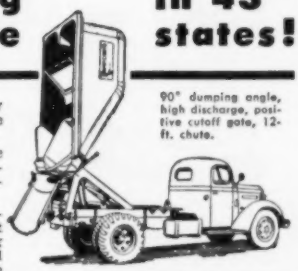
Concrete men all over the country have found out that the Dumpcrete hauls good concrete at low cost.

They have learned how to produce better concrete cheaper with a central mixing plant, air-entrained concrete, and the Dumpcrete.

This low-cost way to produce top-quality concrete is used with great success by ready-mix and building supply companies, by highway and industrial contractors, by house builders and heavy construction concerns, and by local, state and national government agencies.

They are hauling concrete over 45 minutes without agitation and without segregation. They are dumping into buckets, hoppers and forms without a ramp. They are placing lower slump, easy-to-work concrete right where it's wanted with a 12 ft. chute.



90° dumping angle, high discharge, positive cutoff gate, 12-ft. chute.

They are using the Dumpcrete as a utility body, too . . . to haul sand, gravel, excavation, mortar, coal and bulk cement.

Their costs are low. Their production is high. No wonder they like the Dumpcrete.

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The $60 QUESTION... How can Vibrapac owners make $60 extra profit per day on each machine?

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SEE FOR YOURSELF . . .
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We offer you greatly increased plant efficiency . . . with output boosted to 900 blocks or more per hour . . . without sacrifice of quality.

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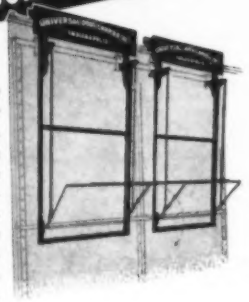
DON'T MISS THIS *Double Feature* AT CLEVELAND

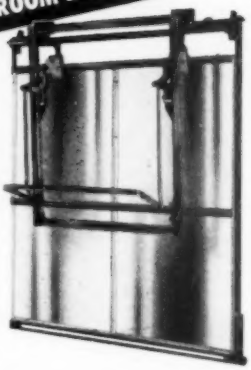
1 UNIVERSAL DOOR CARRIERS



World-famous since 1904, this efficient door handling device is ruggedly built to give years of trouble-free service with practically no maintenance. See it demonstrated and you'll quickly observe how it can improve your operation—by faster, easier door-handling, and by automatically insuring a good tight closure every time.

You are cordially invited to
VISIT OUR BOOTH (NUMBER 157)
CLEVELAND AUDITORIUM
JANUARY 22-25

2 UNI-TEMP CURING ROOM DOORS



Fully insulated, all-metal construction. Let us show you how they can help you: 1. Reduce costs; 2. Increase operating efficiency; and 3. Improve the quality-uniformity of your product. The investment is moderate. In fact, many block manufacturers have told us they expected a much higher cost—up to four or five times as much!

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UNIVERSAL DOOR CARRIER, INC
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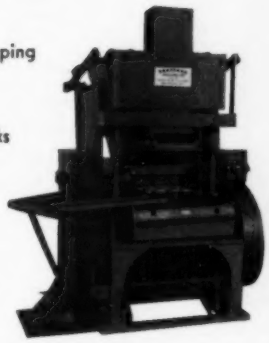
MANUFACTURERS OF QUALITY DOORS AND CARRIERS

1951 PRASCHAK "AUTOMATIC 400"

FEATURES

- New type tamping under vibration
- Press-Head for pressed top blocks
- Floating Mould with adjustable centered vibration
- Automatic cycle 400 blocks per hour



Same Praschak low prices

We also manufacture:

Mixers, Silo Stave Machines, Lift trucks, Conveyors, Cinder Crushers, Cup Elevators, Rotary Screens, Power Off-bearers.

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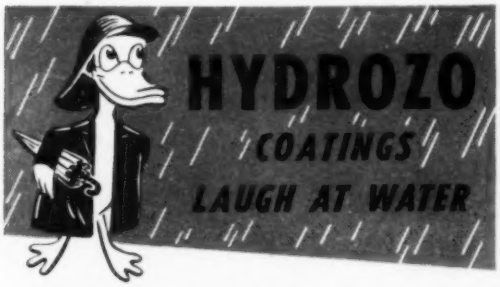
PRASCHAK MACHINE CO.
MARSHFIELD **WISCONSIN**



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Write for information and prices.

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And that's not hay! That's what block plant operators across the country tell us they save with this economical, rugged truck. One man's time . . . every day . . . the whole year 'round . . . *that* adds up!

You save up to $300.00 and more during the first month you put Truck-Man to work in your block or brick yard . . . and you continue to save at that rate during years of faithful, dependable Truck-Man service.

Truck-Man is a light, speedy, highly maneuverable truck that works a shift on little more than a gallon of gas . . . requires minimum maintenance . . . has simple controls any worker quickly learns to operate. The special 62" platform handles even 72 block racks . . . those extra big loads that mean more profit per trip between block machine and curing room. Various platform heights, widths and lengths available to suit your operation.

There's an extra dividend for you, too, in the gentle treatment your blocks get. Truck-Man's easy hydraulic lift and drop, soft *start* and *stop*, and rubber-cushioned ride spot your racks gently . . . no costly checking of green blocks to eat up profits.

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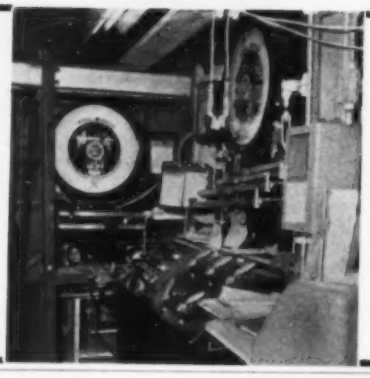
$[SC]^2$ CONTROL

An important factor in developing large scale commercial ready mixed concrete in

CHICAGO



Insures QUALITY CONCRETE

THE FIRST of three large concrete central-mixing plants under construction at the Chicago plants of the Material Service Corporation is now operating. This modern project will include the latest equipment and methods for producing high quality concrete.

The "heart" of the plant at Yard No. 1 is the $(SC)^2$ control that accurately controls batching, and automatically compensates for the moisture content of the aggregates.

$(SC)^2$ controls are also being installed in two other plants.

$(SC)^2$ Batching Control Assembly. Air valves admit cement, aggregate, and water to weigh hoppers.

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SCIENTIFIC CONCRETE SERVICE CORPORATION
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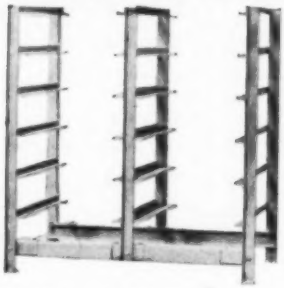
THE *Columbia* MAKES PRECISION BLOCKS.

WRITE TODAY FOR COMPLETE INFORMATION!

Columbia MACHINE WORKS
105 MAIN STREET • VANCOUVER, WASHINGTON

CHASE BLOCK RACKS, CARS, PALLETS

Corrosion-Resistant Hi-Strength Alloy Steel



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Sturdy construction • any style or capacity • Shipped knocked down • Rigid Field connections • assembled Easily

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SEPTIC TANK FORMS

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and handling equipment for high-speed, high-economy production of septic tanks. Faster pouring, stripping, resetting. Our delivery rig needs only one man. The Carpenter line is used from coast to coast.

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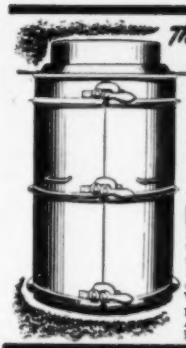

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The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 35 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that **Quinn pipe forms** and **Quinn mixing formulas** combine to produce the finest concrete pipe at lowest cost.

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For making pipe by hand methods by either the wet or semi-dry processes. Built to give more years of service—sizes for pipe from 10" up to 120" and larger—tongue and groove or bell end pipe at lowest cost.

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Korpac Vibrator 4" & 8" attachments. Good.
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Attachment for making 10" concrete block on Besser Vibrapac machine.

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New — Ready To Use!
40,000 BTU capacity

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Concrete Block Making Equipment
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PRICED TO SELL
CONCRETE PRODUCTS PLANT

Steaming curing plant with 30 cars.
Vibropac Block Machine. 12 cu. yd. Batchmixer.
Tile machine, Shingle machine, and Farmpost machine.
Nice assortment of porch post and banister molds, cistern lids, etc.
Retiring from business.
Will sell complete or piecemeal.
(with easy terms if required)

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(Continued on next page)

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Including Attachments to make the following:

(1)—Modular Size cored block
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$395.00

A new vibrator is installed including the over-head pressure-plate and the compound lever press.

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1—8" Attachment. 1—4" Attachment
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600 Chimney Block Pallets (Multiplex)
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This equipment may be bought as separate items or as one unit.

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BLOCK MACHINE BARGAINS

Besser Super VibraPac with attachments and plain pallets. Excellent Condition.
Lith-I-Block 2-at-a-time with attachments, compressor, 1200 plain pallets, mixer, skip. Priced right. Used about 18 months.
Contact me at the Stearns booth NCMA Convention for full details and prices. January 22-25, 1951.

Curtis M. Figg **Ph. 314013—1942**
210 N. 5th Street **Niles, Michigan**

UNBREAKABLE PALLET RINGS

Write for full information

TEXAS FOUNDRIES
LUFKIN, TEXAS

LESS THAN $5000

1—Besser KB-3 block machine with all plain steel pallets and steel racks for making 2800 7⅝ x 15⅝ or equivalent in 4", 3", and 12". Makes single corner, double corner, bull nose, sash units and header blocks.
1—Besser 30' Mixer less than 3 years old just relined.
1—Besser 30' Skip—very good.
See it operating and make a deal with **R. S. Yant, Concrete Products and Material Co., 4520 Dodge St., Omaha, Nebraska. Phone GL-8800.**

FOR SALE— CONCRETE BLOCK PALLETS:

Cored — Pressed Steel — in good condition.
1680—7⅝" x 15⅝"
985—3⅝" x 15⅝"
$1200 packages F.O.B. our plant.

NAMEOKI PACKAGED CONCRETE PRODUCTS COMPANY
Nameoki, Illinois

YOURS TO SERVE

If you have not found the equipment you are looking for, the research dept. of The Concrete Manufacturer can and will gladly assist you. Tell us what it is . . . Write to

Research Dept.
C/O The Concrete Manufacturer
538 S. Clark St. Chicago 5, Illinois

IDLE EQUIPMENT WASTES MONEY

A good way to get back a large part of the money you spent for equipment you're no longer using is to SELL IT.

And the best way to sell it is through the Concrete Manufacturer, the Market Place for supplies and services.

Let someone else have the benefit of equipment you can't use in exchange for hard cash you can use in other ways.

So important is the Concrete Manufacturer used equipment section that many readers (and there are over 24,000 of them—all potential buyers) turn to it first when C M arrives on their desk.

Tell us what you have to offer for sale or trade, we'll set up the ad for you. Mail today and watch the results.

THE CONCRETE MANUFACTURER, 538 South Clark Street, Chicago 5, Ill.

USED TRUCK MIXERS
FOR SALE or RENT

TRADES • TERMS

A WIDE SELECTION OF ALL SIZES

Jaeger • Smith • Rex • Ransome

Hi Discharge From $1250 ***Jaeger and Rex Horizontal From $500***

MOST UNITS RECONDITIONED AND GUARANTEED

Growing popularity and demand for Challenge Truck Mixers has built up our stock of used truck mixers. Many outstanding values any size mixer you need. Wide range of prices depending on condition and age of mixer . . there's a mixer to meet your budget requirements. For detailed information

WRITE • WIRE • PHONE

COOK BROS. EQUIPMENT COMPANY

Exclusive National Distributors For CHALLENGE, The Leader

1815 No. Broadway, Telephone: CApitol 2-9111, Los Angeles 31, California

---

TILE MANUFACTURERS

We can help you increase profits by saving on labor, by increasing production, and making better tile. Write, giving type of equipment now used, and get our free facts. **MEIER-BUSSE Co., 29 West Perry, Tiffin, Ohio.**

Steam Systems For Ready Mix Plants

W. J. Shore
Engineering
320 Broadway, New York 7, N. Y.

Steam Systems For Block Curing

FOR SALE

Fastest growing Ready-Mix Plant in Mid-West—fully equipped—Located in wonderful farming community surrounded by nine small towns in a 12 miles radius. State Class "A" Aggregate within 30 yards.

J. ELROY KABLER
RR#2 West Alexandria, Ohio
Phone: 137F4

FOR SALE

1—No. 7 Stearns Joltcrete
1—(new) 12" Mold Box
1—8" Mold Box & 1—4" Mold Box. 20 Steel Racks
1200— 8" Cast Iron Pallets
1500— 4" Cast Iron Pallets
1000—12" Cast Iron Pallets

For Sale — Cheap
1—Stearns Tamper & Elevator .$200.00

Box No. 202
c/o Concrete Manufacturer
538 So. Clark St., Chicago 5, Illinois

FOR IMMEDIATE SALE

(1) Gocorp Crown Prince two block plain pallet block machine including Height Control-attachments for making 8x8x16 & 12x 8x16, halves, corners, sash and pier blocks (Modular size). Machine 8 months old.
(2) Automatic Pallet return.
(3) Plate type Off-Bearer (Picks up two pallets) switches & control.

Value—$19,885.00
Selling price—$12,000.00
Installing larger machine.

E. DeVECCHIS & SONS
134 West Shirley Street
Mount Union, Pennsylvania

FOR SALE

Besser fully automatic K 3 tamper very good condition, 7 attachments front end conveyor, 2500 wood pallets, 50 racks. Can be seen in operation.—$800.00 takes it.

LIGNEEL CEMENT BLOCK COMPANY
Ward Avenue City Route 38
La Crosse, Wisconsin

CEMENT COLORS

Write for free samples and prices of "LANSCO" CEMENT COLORS produced in 24 attractive shades. Packed in bulk and in 1 lb. and 5 lb. packages.

manufactured by
LANDERS-SEGAL COLOR CO.
71 Delevan St. Brooklyn 31, N. Y.

"SHALITE"

An expanded shale aggregate for lightweight block and concrete

AVAILABLE NOW

POSTON BRICK & CONCRETE PRODUCTS CO.
SPRINGFIELD, ILLINOIS Phone 83404

Advertise
Your "Wants"
and
Surplus
Equipment

AN OPPORTUNITY to purchase a block manufacturing business 100 miles from Chicago. Established five years. Despite cement shortage, cramped quarters and insufficient production facilities, sales this year will approximate $145,000.00. Recent health development causes us to seriously reconsider installation of new Besser equipment in new spacious home which we recently purchased. We will either lease or sell you our new quarters and you can install your own equipment.

Box No. R 4, c/o Concrete Manufacturer
538 So. Clark Street Chicago 5, Illinois

The LOW COST CAR SHAKER

... of course it's a

NATIONAL

for

FASTER UNLOADING

in

'51

Do you have unloading "headaches" because you can't bulk materials out of hopper cars fast enough?

Just install NATIONAL Car Shakers — they will discharge 50 tons of sand, gravel, cinders, stone or similar materials in a matter of minutes.

These units are light-weight, powerful, and require no heavy auxiliary equipment. Handled by a one ton hoist with jib crane or monorail. One man can set them up, and under normal conditions no one is needed inside the car.

NATIONAL Car Shakers are priced low, and are sturdily built for long service and minimum maintenance costs.

National Car Shaker is being successfully used by many of the leading ready-mix and concrete plants.

Write for Complete Information

NATIONAL CONVEYOR AND SUPPLY CO.
352 N. Harding Ave., Chicago 24, Ill.
NEvada 2-0141

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LOOK! JOE . . . I made this cut with my Clipper in 5 seconds!

SOLD DIRECT *from Factory to User*

Yes . . .

CLIPPER MASONRY SAWS

Make *Any* Cut Quickly and Easily!

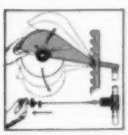
Yes, you can slice through the hardest materials in seconds with the New Clipper Masonry Saws. Smoother, faster cutting action than ever before. You'll find Clipper's the Genuine answer to any masonry cutting problem. Contractors agree on the New wet or dry cutting Model HD for the 100% Answer to ALL masonry problems. Actually the HD is Two Saws In One—it will meet your DUSTLESS cutting requirements in confined areas and will cut dry for outside operations. Every Clipper Masonry Saw is GUARANTEED, "To provide the Fastest Cut . . . at the Lowest Cost . . . with the Greatest Ease . . . Any Time . . . Any Where!"

PACKED WITH EXCLUSIVE FEATURES

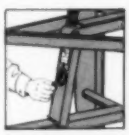
DUSTLESS CUTTING WITH MODEL HD

PRESSURE EQUALIZER
Makes your blades last longer . . . because Equalizer Spring automatically cushions blade pressure whether cutting HARD or SOFT materials. Guarantees faster cutting—longest blade life. Outstanding for blade economy.

SELECT-A-NOTCH
One man easily adjusts Cutting Head to desired height . . . whether cutting Stone, Concrete Block, Glazed Tile or Quarry Tile. Operator's hands merely guide — All weight supported by rear Connecting Bar.



ADJUST-A-CUT
Merely pull the knob — and the Cutting Head is free for finger-tip setting at any desired angle. Release the Knob—and head is locked in desired position. Another Clipper Patented Feature.



SAVE-A-BLADE DIAL
Just turn the Save-A-Blade Dial to the hardness of the material you are cutting and the Clipper Pressure Equalizer Spring automatically sets the tension, to guarantee faster cutting and longer blade life — whether the material is HARD or SOFT . . . Whether using Diamond or Abrasive Blades . . . Cutting Wet or Dry with the Dustless Model HD. (Not on Model C Series.)

WET-OR-DRY PUMP
No need to remove belt when cutting dry. No maintenance . . . Factory Sealed . . . An exclusive Clipper development. Patented Water Application Unit systematically controls water flow.

Only Clipper Has NINE Models To Choose from! . . .

Not ONE Model—Not TWO Models . . .
But NINE separate and distinct Clipper Saws for you to choose from. Each completely different in price, in size, in performance. Select the Clipper Model that EXACTLY SUITS YOUR particular needs!

Clipper

DRY ABRASIVE BLADES
WET ABRASIVE BLADES
DIAMOND BLADES

Cut DRY—or cut WET . . .
Cut with ABRASIVE Blades—or with DIAMOND Blades . . .
In the more than 50 standard and special CLIPPER Blade specifications you will find THE EXACT SUPERIOR BLADE to cut YOUR materials AT THE EXACT SPEED YOU require!

Clipper
NATION-WIDE DIRECT FACTORY SERVICE

MANUFACTURING COMPANY
KANSAS CITY 8, MO.

LADELPHIA ● CLEVELAND ● AUSTIN, TEX. ● PITTSBURGH
SHINGTON, D.C. ● CHICAGO ● ST. LOUIS ● SAN FRANCISCO
W YORK ● DETROIT ● CINCINNATI ● ATLANTA ● BOSTON

FREE TRIAL!

Nine Clipper Models available on FREE TRIAL. Priced from $195 . . . Shipped Direct from Coast to Coast Clipper Factory Branches.

TEAR OFF AND MAIL

CLIPPER MANUFACTURING CO.
2801 W. WARWICK ● KANSAS CITY 8, MO.

Send TODAY information on the FREE TRIAL offer and literature and prices on the 1950 Clipper Masonry Saws.

NAME _____

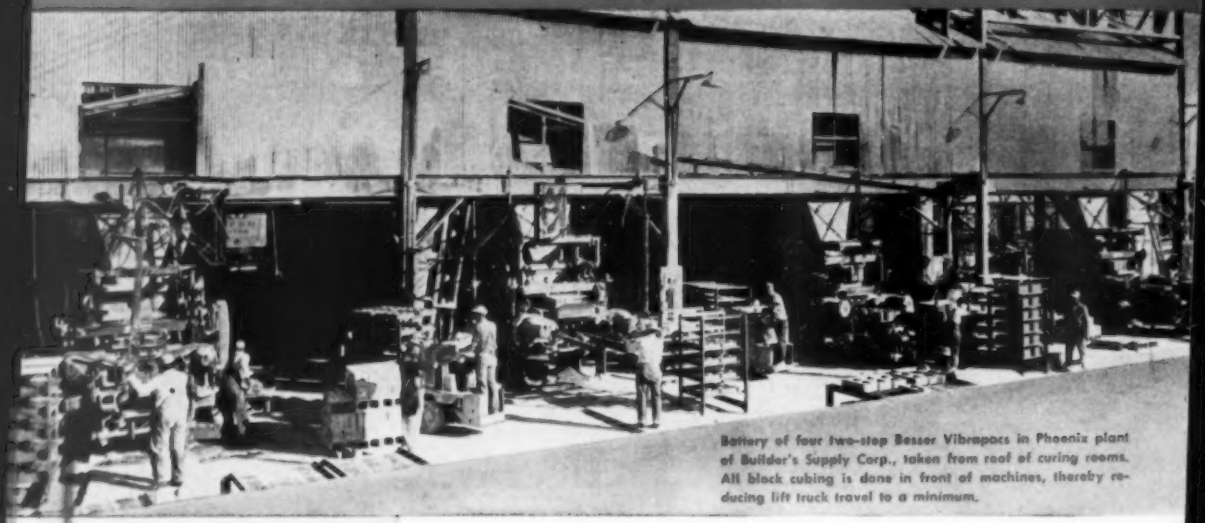
COMPANY _____

STREET _____

CITY _____ ZONE _____

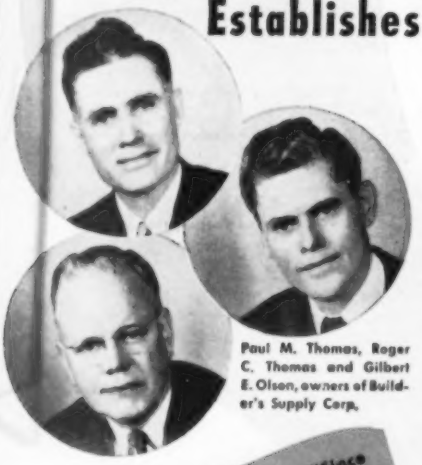
STATE _____

Another Leader* in the Products



Battery of four two-step Besser Vibrapacs in Phoenix plant of Builder's Supply Corp., taken from roof of curing rooms. All block cubing is done in front of machines, thereby reducing lift truck travel to a minimum.

Besser-Equipped Plant of Builder's Supply Corporation Establishes Concrete Block Production Records!



Paul M. Thomas, Roger C. Thomas and Gilbert E. Olson, owners of Builder's Supply Corp.

Builder's Supply Corp. of Phoenix, Arizona is one of the largest and most successful Concrete Products Plants in the country. Starting operations in 1944, with a small Tamper, the Company today operates the equivalent of eight Vibrapacs in their Phoenix, Arizona, Albuquerque, New Mexico, and Calipatria, California plants.

The Company's enthusiasm for Besser Vibrapacs is reflected in a statement made by one of the owners, Paul M. Thomas: "After the first month's operation with a Besser Vibrapac, we have never showed a loss. This is something we couldn't say when we operated other machinery, as month after month we showed so much down time that we were always operating in the red. By having the entire cooperation and teamwork offered by the Besser Company, we have been able to prosper and progress in a fashion that we do not think possible with any other equipment or company."

BESSER MANUFACTURING CO., Alpena, Mich., U.S.A.

MR. PAUL M. THOMAS SAYS: "Since December 1947 we have been operating Vibrapacs on the Agreement Plan replacing our two owned Vibrapacs. We are still highly in favor of this method of operating Vibrapacs."

Aerial view of the Phoenix plant showing part of the 2,000,000 stockpile of block. Roofs for curing rooms constructed of Soffit Block, using Acrow Telescopic Centers supplied by Besser.

★ This is the 88th of a series of ads featuring leaders of the Concrete Products Industry who are stepping up block production with Besser Vibrapac machines.

BESSER

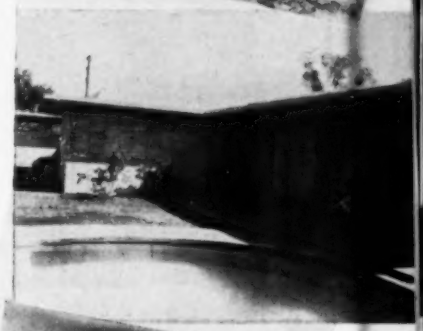
BATCH MIXERS | SKIP LOADERS | BLOCK & BRICK CUBERS | SUPER VIBRAPAC | SINTERING PLANTS | ACROW CENTERS | ROOF TILE MACHINES

Industry Prefers Besser Vibrapacs

75% of All Building in Phoenix, Arizona is CONCRETE MASONRY Construction

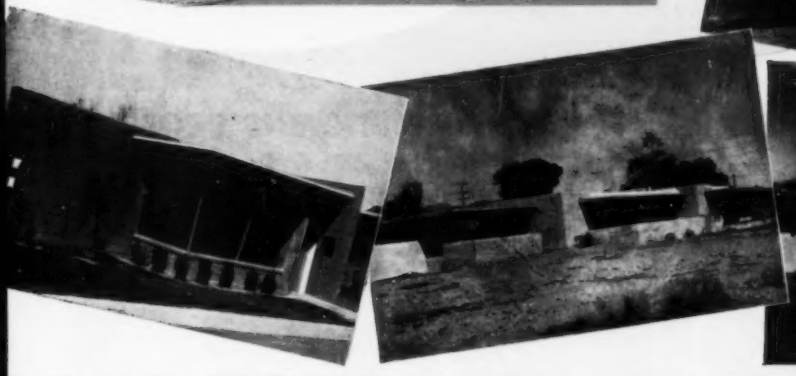
In the Phoenix area, Concrete Masonry has attained a firm foothold. Wherever you look, you find new homes, new commercial structures, new schools and churches built with Concrete Masonry. Most of these buildings are designed by architects. Here, several architectural firms have designed and built their own homes and offices of concrete block. Phoenix may well be regarded as a show place for the Concrete Products Industry.

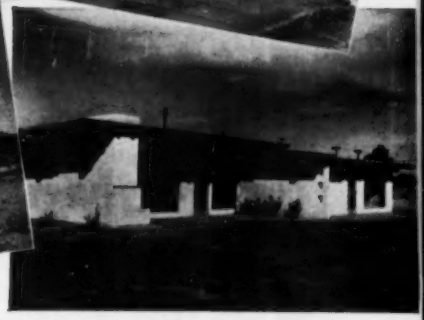
The Builder's Supply Corporation, with the help of fully automatic Besser Vibrapac machines, is an important factor in this tremendous municipal development. The Company supplies the bulk of the demand for concrete masonry units of all types and sizes. 85% of all units go into residential construction. The Phoenix plant exhibits at all builders' shows and each year maintains a prominent concrete masonry exhibit at the Arizona State Fair. No doubt about it, Builder's Supply has done an outstanding job in selling the merits of Concrete Masonry to the general public.



Note the BEAUTY and ARCHITECTURAL FLEXIBILITY of the Phoenix homes shown here. They are all built with VIBRAPAC Concrete Masonry Units furnished by Builder's Supply Corp. To the permanence of concrete are added such features as fire safety, storm safety, insulation against heat and cold, acoustical and soundproofing qualities, plus definite ECONOMY.

Front Pallet Feed Besser Vibrapac recently installed in Builder's Supply Corp. plant. It's a two-step machine with height and density controls. Fully automatic. No machine operator required.





BESSER

BATCH MIXERS | SKIP LOADERS | BLOCK & BRICK CUBERS | SUPER VIBRAPAC | SINTERING PLANTS | ACROW CENTERS | ROOF TILE MACHINE

...So satisfied they installed a second STEARNS 15!

New Holland Concrete Products, Inc.

Reinforced Concrete Pipe
Ready-Mixed Concrete
Building Blocks

Telephone: 718

Metal Windows

New Holland Pennsylvania

November 27, 1950

Stearns Mfg. Company
Adrian, Michigan

Gentlemen:

We started using our first Stearns equipment in 1944 when we purchased a Stearns Clipper and a Stearns 28 cubic ft. mixer. We continued to operate with this equipment until 1949 when we moved into our newly built, relocated Concrete Products plant designed to manufacture concrete block, concrete pipe and ready mix concrete.

In this plant we installed a Stearns No. 15 Block Machine with a pallet return, double pallet offbearer and a Stearns 50 cubic ft. mixer.

We were so well pleased with the quality of the blocks produced and the operation of this equipment that in October 1950 we added the second Stearns No. 15 with pallet return and offbearer and another Stearns 50 cu. ft. mixer.

With this equipment we are now producing six 8" units with three men where in 1944 to 1948 we were producing one 8" block per cycle, also by using three men.

We feel that in using our Stearns equipment we are able to supply our customers with a concrete block of uniform size, high compaction and load bearing strength.

Our experience in dealing with the Stearns Manufacturing Company in the past has been entirely satisfactory and we would be glad to recommend their equipment to those who may be interested in producing a quality block at a minimum cost.

Yours very truly,
NEW HOLLAND CONCRETE PRODUCTS, INC.

By Ivan M. Martin
President

IMM/rel
mcb

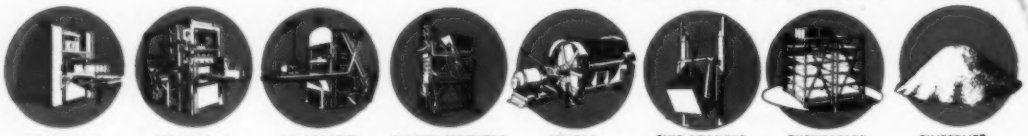
STEARNS FROM THE START! The beautiful, new, 11½-acre plant of New Holland Concrete Products, Inc., is one of the most modern in America!

HIGH QUALITY CONCRETE BLOCK of maximum density, great load-bearing strength and fine appearance is produced *at minimum cost* by these two rugged, fully automatic, *one-man* Stearns 15s in the New Holland Concrete Products plant. The 41-man, 7-truck company supplies southeastern Pennsylvania with concrete pipe and ready-mix, as well.

PERFORMANCE IS PERFECTION... PERFECTION IS PROFIT!

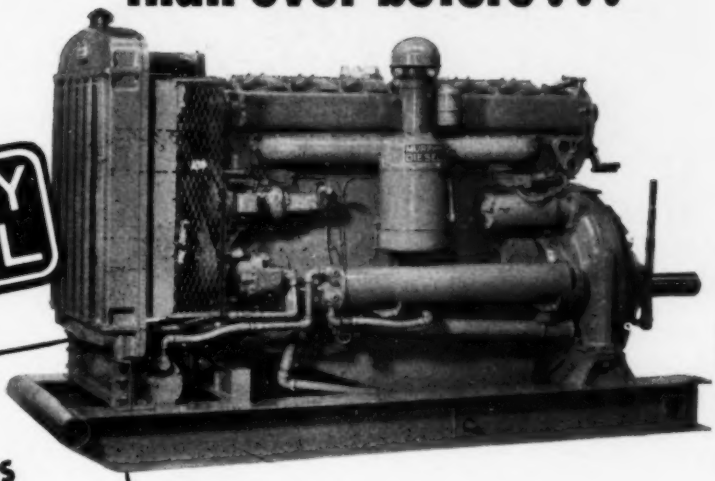
MODERNIZE WITH A STEARNS!
BACKED BY MORE THAN A QUARTER-CENTURY OF KNOW-HOW!

STEARNS
MANUFACTURING COMPANY · INC
ADRIAN • MICHIGAN



STEARNS 15 | STEARNS 50 | JOLTCRETES | CLIPPER STRIPPERS | MIXERS | SKIP LOADERS | TURNTABLES | SINTERLITE

NOW MURPHY DIESEL offers you a broader range of sizes than ever before . . .



MURPHY DIESEL

- ✓ 21 Models
- ✓ Diesel Engines or Power Units
- ✓ 1200 or 1400 RPM
- ✓ Generator Sets
- ✓ Mech-Elec Units

And only MURPHY offers all these design features:

- TRUE DIESEL OPERATION gets more work out of your fuel . . . minimizes wear and tear on the engine.
- UNIT FUEL INJECTION eliminates the troubles of ordinary diesel fuel injection systems.
- FOUR VALVES PER CYLINDER increase efficiency and put an end to valve troubles.
- HYDRAULIC SERVO-TYPE GOVERNOR protects the engine and assures immediate response to power demands.
- HEAVY DUTY CONSTRUCTION assures thousands of hours of dependable service.

WITH its broad new line, Murphy Diesel makes its advantages of economy and dependability available to more power users than ever before. Now you can have 1200 or 1400 continuous rpm operation in engines or power units capable of delivering 90 to 220 H.P.; altitude engines, which maintain sea level ratings at altitudes up to 9000 ft., are also available. Murphy Diesel Generator Sets offer continuous ratings from 60 to 133 K.W. Mech-elec units deliver both electric power and mechanical power, simultaneously or separately.

Whatever your power requirements, it will pay you to get the facts on Murphy Diesel. Write for a copy of the booklet *"10 Questions to Ask a Diesel Engine Salesman"* or see your Murphy Diesel Dealer.

MURPHY DIESEL COMPANY
5307 W. Burnham St.
Milwaukee 14, Wisconsin

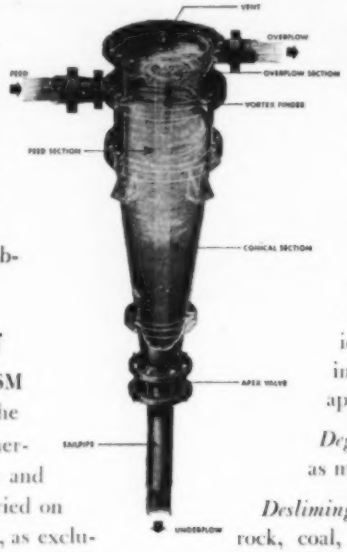
SALES PARTS AND SERVICE
Strategically located throughout the United States

a new and proven tool in metallic and non-metallic minerals and chemical processing

the DORRCLONE*

(DUTCH STATE MINES CYCLONE)

The DorrClone is a compact cylindro-conical classification unit utilizing centrifugal force in place of gravity. It provides a new method of separating finely divided solids in liquid suspensions and constitutes an important new tool with which to supplement current established practices.



RESEARCH AND DEVELOPMENT

Development of the DorrClone (DSM Cyclone) was begun in 1939 by the Dutch State Mines in The Netherlands, where a continuing research and development program has been carried on since that time. The Dorr Company, as exclusive licensee under the Dutch State Mines patent rights in all fields other than that of heavy media separation, has been actively engaged since 1948 in development work relating to design variables affecting performance, materials of construction and possible fields of commercial use. The result of this program is a carefully engineered unit, capable of controlled and predictable operation.

PRESENT AVAILABILITY

DorrClones are now available singly or in multiple arrangements in four standard sizes: 3″, 6″, 12″ and 24″ diameters.

APPLICATIONS

Standard units are now limited to separations in the 20 micron to 100 mesh range but present studies indicate broader applications in the future. Typical commercial applications proven to date are:

Degritting of viscous suspensions such as milk of lime and clay slurries.

Desliming of metallurgical pulps, phosphate rock, coal, iron ore and tailings for mine backfill, with the production of extremely dense underflows where such are desired.

Classification of crystalline and other granular suspensions.

PATENTS

The DorrClone is covered by patents issued and pending in the United States and other countries.

Further information... We welcome inquiries on specific problems and applications and are prepared to undertake engineering investigations within the scope of our present knowledge and experience.

*DorrClone is a Trademark of The Dorr Company

DORR

RESEARCH ENGINEERING EQUIPMENT

DORRCO

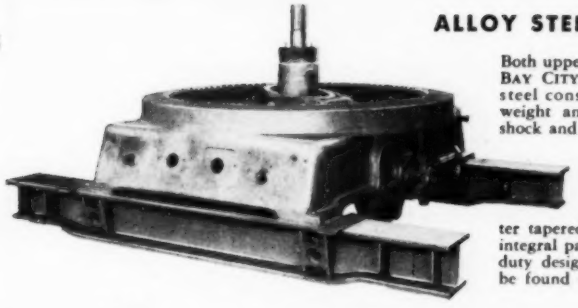
THE DORR COMPANY, ENGINEERS
BARRY PLACE, STAMFORD, CONN.
NEW YORK • ATLANTA • TORONTO
CHICAGO • DENVER • LOS ANGELES
RESEARCH AND TESTING LABORATORIES
WESTPORT, CONN.
SUGAR PROCESSING
PETREE & DORR DIVISION, STAMFORD, CONN.
ASSOCIATES AND REPRESENTATIVES
Dorr Technical Services and Equipment Are Also Available Through Associated Companies and Representatives in the Principal Cities of the World. Names and Addresses on Request.

PROFITS start here with a BAY CITY

With a BAY CITY Model 65 on the job, you can load out more sand and gravel at lower cost and realize a higher profit in your pit operations . . . an important consideration that affects the profit & loss picture for your whole business. Low operating and maintenance costs make this a favorite with owners like Lyle Walker who has just put a new BAY CITY high-lift shovel to work in his New Hudson, Michigan pit. Shown in operation in these two photos, this 1¼ yard shovel is engineered from crawlers to boom-point for long life and dependable service. The 65 is a fast, sturdy machine with plenty of exclusive BAY CITY features such as helical cut gears for quiet, smooth operation . . . tandem drums on separate shafts . . . wide brakes and booster operated clutches . . . powerful one-piece chain crowd. If you're planning to invest in a shovel . . . investigate BAY CITY to keep your operating costs down and your profits up. See your nearest dealer or write us here in Bay City for full facts.

BAY CITY SHOVELS INC., BAY CITY, MICHIGAN

181

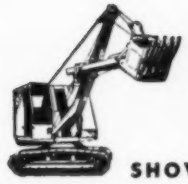


ALLOY STEEL CAST BASES

Both upper and lower bases of the BAY CITY 65 are unit cast alloy steel construction for desirable weight and sturdiness to absorb shock and vibration of heavy-duty service. On the one-piece lower base shown here note the big, husky center post and the large diameter tapered roller path that is an integral part of the casting. Heavy duty design and construction can be found throughout the 65.

√ CHECK LIST

- Fully Convertible
- Long, Wide Crawlers
- Tandem Drums
- Power Booster Clutches
- High Line Speeds
- Wide Vision Cab



BAY CITY

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

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Automotive Shovel With Hydraulic Crowd and Hoist Speeds Up Excavation Work

Unit Reduces Excavation Costs; Loads Up To One Cubic Yard A Minute

MOVING SHOVEL LOADERS to and from jobs is one of the most expensive unproductive costs in excavation work. Contractors lose hundreds of hours and spend thousands of dollars annually moving this equipment. Developments since the war show that contractors can be relieved greatly of these costs. One of the most successful developments has been the manufacture of the rubber-tired Dempster-Diggster shovel loader that travels at truck speeds.

THE DEMPSTER-DIGGSTER is shown here digging out a 15 foot bank of hard chert. The power crowd permits bucket to keep digging until loaded . . . no digging with wheels.

Digs Through 15 Foot Bank

Construction men have found that on big jobs the Dempster-Diggster has no equal for working in tight places and for freeing big shovels for heavier work. The Diggster has an 8 foot 10 inch crowding reach, will dig through a 15 foot bank, and will dig 15 inches below grade.

Manufacturer's tests and contractor's reports show that the Diggster will load up to one cubic yard a minute. This speed in excavation is accounted for, mainly, by the Diggster's exclusive independent hydraulic crowd and hoist action, the hydraulic steering, and wheel-type traction.

The power crowd permits bucket to keep digging until loaded . . . no digging with wheels. The hydraulic steering gives the driver sensitive, finger-tip control. When accelerated, a one-handed twist of the steering wheel puts the machine in any desired position. By operating on rubber-tired wheels, the Diggster, of course, can move at the fastest possible speed.

ENCLOSED STEEL CAB protects operator against inclement weather.

Not A Fair Weather Machine Only

Under adverse conditions on a state highway near Charleston, W. Va., recently, the Diggster loaded 150 cubic yards of sticky blue clay in only three hours. The work consisted of cleaning up slides on 14 foot embankments on both sides of a concrete road. The weather was not cooperative, inasmuch as considerable rain fell the night before. But the Diggster showed no tendency to slide. The job foreman stated that it loaded more material in two hours than the $\frac{3}{8}$ and $\frac{1}{2}$ cubic yard truck shovels normally did in an entire day. This and many other operations in inclement weather have proved that the Diggster is not a fair weather machine only.

The Dempster-Diggster has a 15 foot turning radius, is 20 feet long when bucket is in traveling position, and is nine feet and six inches in height.

Four standard interchangeable buckets of two types are available. Digging buckets with four bottom teeth in 1 and $1\frac{1}{4}$ cubic yard (heaped) capacities. Materials handling buckets in $1\frac{1}{2}$ and 2 cubic yard (struck) capacities.

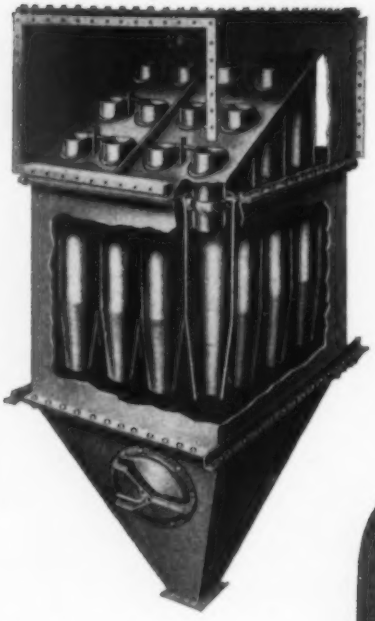
Crawler Traction Available

For fast, efficient operation in difficult terrain, the Diggster is available with crawler-type traction.

Complete information and prices may be obtained by writing the manufacturer, Dempster Brothers, Inc., Knoxville, Tenn.

DEMPSTER DIGGSTER

DEMPSTER BROTHERS
211 N. Knox
Knoxville 17, Tennessee



In dust and fly ash recovery

MULTICLONE COLLECTORS

***and only Multiclones* give vital advantages like these...**

No wonder "MULTICLONE" is the leading name in the centrifugal recovery of dust and fly ash from all types of gases, hot or cold.

No other mechanical recovery equipment has so many years of dust and fly ash recovery experience behind it... or has such uniformly high collecting efficiency... or provides so many other money-saving, space-saving advantages as MULTICLONE. The four advantages outlined below are by no means the complete MULTICLONE story, but are typical of the vital savings found *exclusively* in MULTICLONE equipment...

Uniformly High Recovery:
MULTICLONE's multiple *small diameter* tubes—made possible by its exclusive vane design—whirl the dirty gases with greater centrifugal force, thus throwing out not only the large, medium and small particles, but also a high percentage of the *extremely small* particles of 10 microns and less. This, coupled with the fact that there are no pads or filters to become choked with recovered material, results in a more complete recovery of *all* suspended materials from the gas stream.

Long and narrow

Square

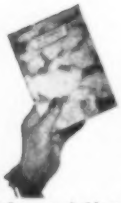
Maximum Adaptability:
In addition to its unusual compactness, the MULTICLONE is also unusually adaptable to various installation requirements. Where head room is low it can be installed with side-inlet side-outlet connections. Where side clearances are restricted, it can be installed with side-inlet top-outlet connections. In addition, without changing capacities, the shape of the unit can be varied—long and narrow, short and wide, or square—to fit restricted spaces ... and its single-inlet single-outlet duct requirements permit greater flexibility and simpler installation. These savings slice installation costs, space requirements and insulating expense.

Space-Saving Compactness:
Plant space costs money—so be sure to check space requirements carefully. As shown in the accompanying chart, the MULTICLONE requires less floor space and less cubic space than any other unit of comparable capacity and performance. Translate these savings into today's high costs for plant space and you readily see the great importance of this one MULTICLONE advantage alone!

Make	Relative Space Requirements In Sq. Ft.	In Cu. Ft.
Multiclone	1.0	1.0
Collector A	2.1	1.8
Collector B	5.9	3.2
Collector C	6.8	3.9

Minimum Maintenance:

The MULTICLONE has no high speed moving parts to repair or replace... no pads or filters to clean or renew... nothing to choke the gas flow or increase draft losses as suspended materials are recovered. MULTICLONE draft losses remain uniformly low *at all times*. Further, the recovered material from an entire bank of tubes is collected in a *single* hopper—far easier to service and maintain than the multiple hoppers of conventional cyclone units.



FREE INFORMATIVE BOOKLET
This 32 page booklet outlines the basic principles of centrifugal dust recovery and shows the many ways MULTICLONE advantages assure higher recovery at lower overall costs. A free copy of this booklet will gladly be sent on request. Write today!

Before you decide on *any* recovery equipment be sure to get complete information on MULTICLONE advantages. A letter, wire or phone call to our nearest office places this information in your hands without obligation. Get all the facts and you will get MULTICLONE Collectors!

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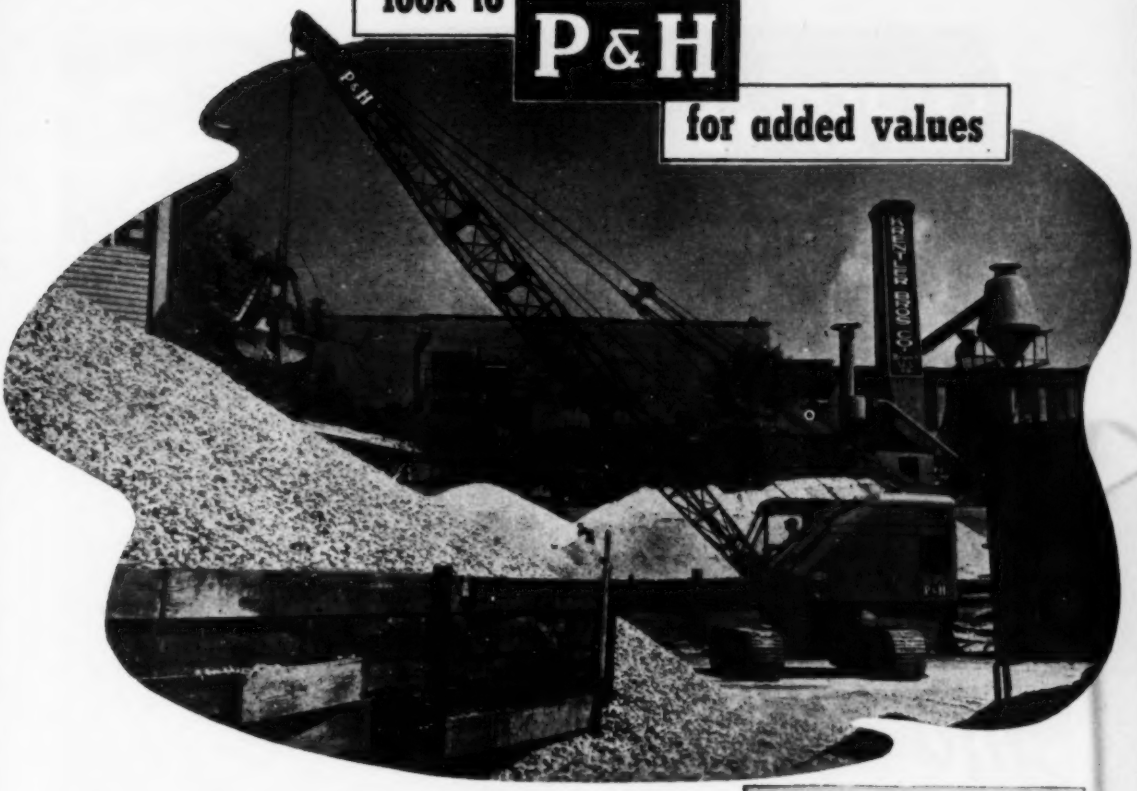

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You can slash materials handling costs with modern, more mobile, faster operating P&H Excavators.

Added Values like these will reward you with stepped-up digging speeds and provide new freedom from profit-wasting delays:

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Whether it's a shovel for pit work or a clamshell for yard service, you will profit from P&H Added Values. For complete literature fill in coupon, attach to your business letterhead, and mail.

P&H Excavators are built in all sizes and types through 6 cubic yards capacity; gasoline, diesel or electric power.

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City ..... Zone ..... State .....

Attention of ..... Title .....

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Abrasion and Vibration

Abrasion and vibration — twin demons of destruction — meet their match when they try their war of wear against Super-Tempered Precision Screens.

Super-Tempered Precision Screens bring two big advantages to bear against these ever-present destructive forces. *Made of special super-tempered steel,* rolled and heat-treated in our own plants, they have long-lasting resistance to abrasion and fatigue. *Woven tightly on powerful hydraulic looms* of our own exclusive design, they won't loosen up or shake apart under the most punishing vibration.

Super-Tempered Precision Screens come in practically any length or width required for vibrating screen or trommel. Furnished with welded, hooked or reinforced edge to fit your equipment.

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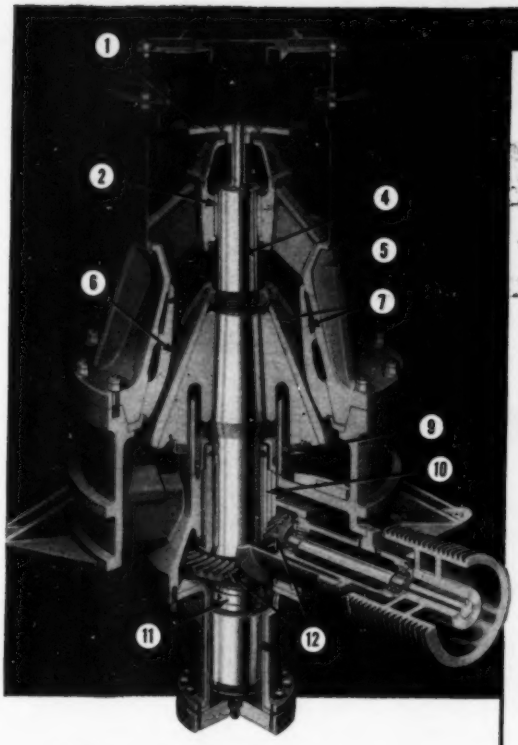
HYDROCONE CRUSHER Gives You All These Benefits



1 **WOBBLE PLATE FEEDER** distributes feed evenly. Standard on crushers with fine crushing chambers; optional on others.

2 **SPIDER BEARINGS** are readily replaceable. Sleeve type in larger units; ball and socket bearings in the smaller machines. Lubricant is retained by an effective seal encircling the main shaft.

3 **FULLY AUTOMATIC** lubricating and oil conditioning system.

4 **SHORT HEAVY** *Hydrocone* crusher shaft has "cold-worked" finish, producing a high quality bearing surface.

5 **TOP SHELL AND SPIDER** cast in one piece. Can be easily removed.

6 **THREE TYPES** of crushing chambers available: Fine, Intermediate and Coarse, depending on the application.

7 **ONE-PIECE** inner and outer crushing surfaces are self-locking. Zincing of mantles not required on the 48-in. and smaller machines.

8 **RUBBER COMPRESSION MOUNTINGS** isolate vibration from supporting structure, eliminate need for massive foundations.

9 **ENCLOSED RING TYPE DUST SEAL** — A plastic ring impregnated with lubricant and held in place by a retaining ring. Dust is sealed from crusher eccentric by contact of the plastic ring with the outer periphery of the dust collar.

10 **BRONZE ECCENTRIC SLEEVE** is easily changeable in the field. Various eccentric throws may be obtained through the use of different sleeves, adding to the versatility of the *Hydrocone* crusher.

11 **THREE-PIECE** step bearing supports the main shaft on the hydraulic piston. *Hydrocone* crushers are designed to withstand crushing pressures much greater than those encountered in actual service.

12 **BEVEL PINION AND GEAR** are accurately cut . . . provide smooth operation and long life. Spiral bevel gears on the larger crushers.

AND — MOST IMPORTANT — *Hydrocone* crusher offers you *hydraulic control* of product size! Push-button operation on larger crushers; hand crank adjustment on smaller machines. An Automatic Reset protects crusher from tramp iron.

Capacities 10 to 1000 tph; sizes up to 84-in. diameter cone. For more facts, contact the A-C representative in your area, or write Allis-Chalmers, Milwaukee 1, Wis., for Bulletin 07B7145B.

A-3128

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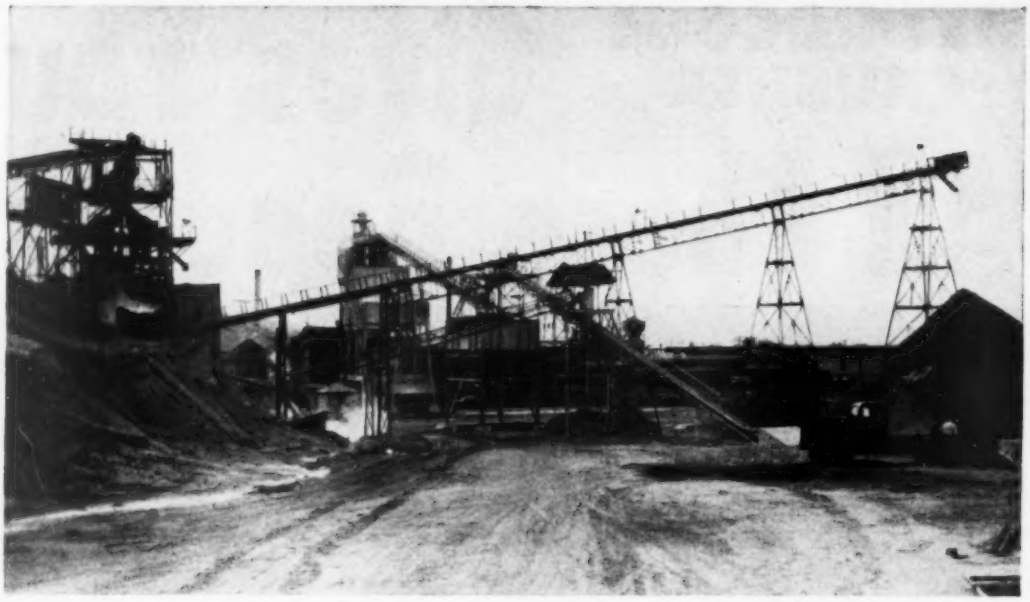

Winner of the 880-Yard Run!

This half-mile long S-A conveyor system delivers gravel from pit to the scalping and washing screen house *at substantial savings* as compared to hauling the same material the same distance by truck. In addition, gravel is then conveyed to the screening and crushing plant and distributed to three separate storage points.

Such versatility in the applications of S-A equipment is typical of the resourcefulness of S-A engineers. They can draw on fifty years experience in finding the best answers to all types of sand and gravel handling problems. Because Stephens-Adamson makes *all* types of sand and gravel handling equipment, the S-A engineer is free to recommend the unit or units best suited to your specific needs.

If you plan a new or remodelled conveying system, write us today . . . you are not obligated.

UTAH SAND & GRAVEL PRODUCTS CORP.
North Salt Lake City, Utah

Veteran S-A belt conveyor system at this plant transports gravel one-half mile from pit to plant and through processing to storage. S-A screens, feeders and gates are important plant components. The Ready-Mix Concrete plant in the background is a recent plant development and is served by an S-A reclaiming belt conveyor for sand and gravel and bucket elevator for handling cement. Stockpiling and reclaiming conveyors permit continuous peak production during the entire year.

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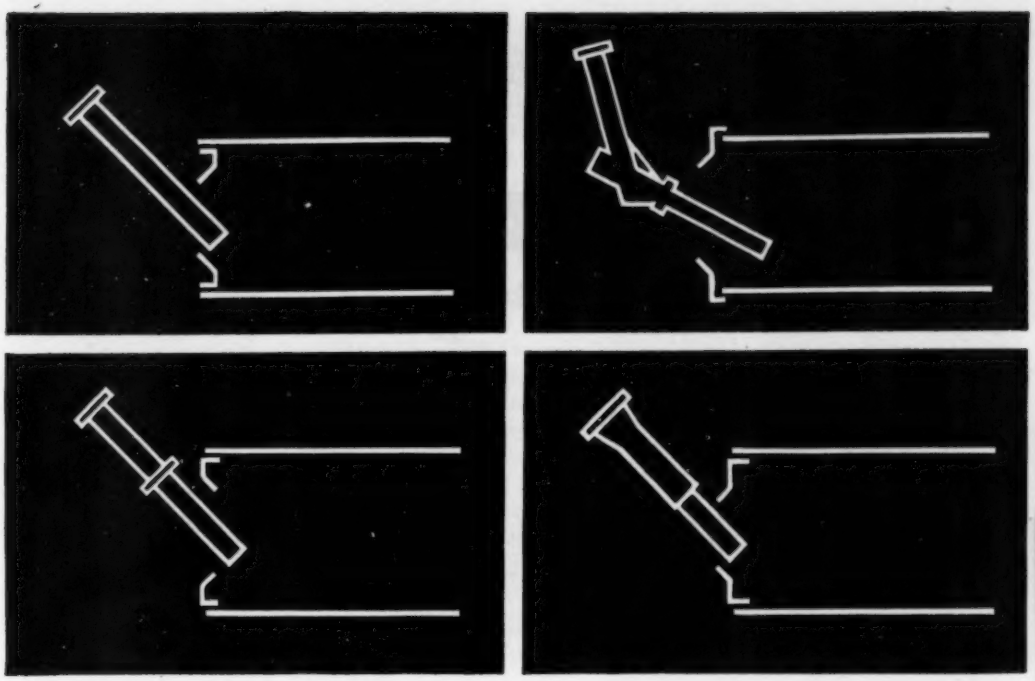

THERMALLOY* Feed Ends and Feed Pipes are EASY TO INSTALL

Thermalloy "40" kiln feed end of segmented cone design.

Thermalloy "50" feed pipe section flanged on each end.

Thermalloy feed pipe assembly of unique "angled" design.

The diagrams above show some of the many ways in which Thermalloy feed ends and feed pipes can be adapted to your kiln requirements.

No special "built-up" brick feed ends are necessary, thus reducing installation costs. The segmental design of Thermalloy feed ends prevents cracking due to expansion and contraction. And Thermalloy feed ends have lasted up to *10 times as long* as "bricked-up" ends.

With the many different designs of Thermalloy feed pipes and feed ends available, an Electro-Alloys engineer can help you choose the type best adapted to your requirements—for easiest installation and maximum service life

Call your nearest Electro-Alloys office, or write Electro-Alloys Division, 2131 Taylor St., Elyria, Ohio.

*Reg. U. S Pat. Off.

Specify THERMALLOY* for heat and abrasion resistance ... CHEMALLOY* for corrosion resistance

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BELT FASTENER No. 500

FOR HEAVY CONVEYOR BELTS OF CHANGING LENGTH

These heavy-duty belt fasteners make a strong, flexible joint in conveyor belts, belts of any width and of from ⅜" to ½" thickness. They offer special advantages in mines, quarries or industrial setups where length of position of belt is frequently changed, because sections can be removed or added at will. Joints are opened for this purpose by simply pulling out the hinge pin.

Easily and quickly applied on the job or in the shop. Special design gives deep compression into belting and smooth, flush joint.

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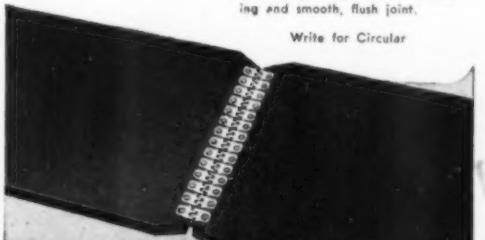

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The screen that "can take it"

. . *and always give good service*

For highly abrasive material, Hendrick Perforated Metal Plate is heat-treated by an exclusive process and maintains uniformity of mesh throughout an unapproached length of service life. That's why it is both most efficient and most economical for vibrating and shaking screens.

The full clearance of Hendrick Perforated Plate minimizes clogging, and the case with which decks can be changed cuts labor costs. It can be furnished—flat or corrugated—with any desired shape and size of perforations, in proper gauges of tank, high carbon, high tensile, and abrasive-resisting steels, and in other commercially rolled metals.

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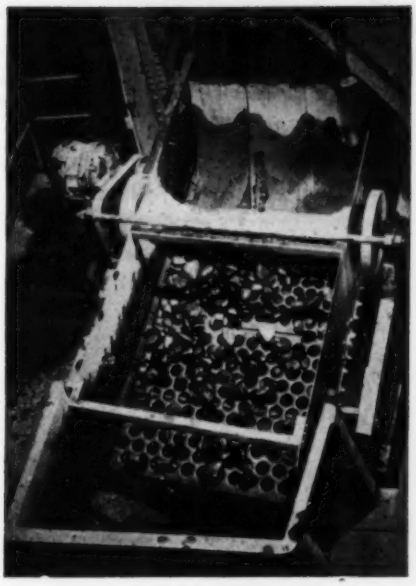

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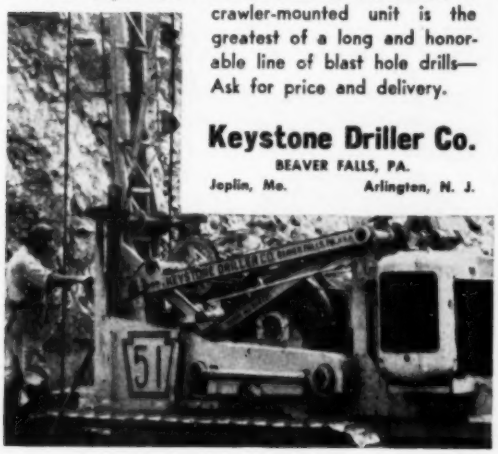
KEYSTONE OFFERS—a welded and riveted frame—the strongest, toughest and most enduring type of construction for quarry drills. Other Keystone features are the masthead shock absorber, and spudding stroke adjustment for all conditions. The Model 51 crawler-mounted unit is the greatest of a long and honorable line of blast hole drills—Ask for price and delivery.



Keystone Driller Co.

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"LUBRIPLATE Prevented Parts Replacements and Tie-ups"

After clearing 500 acres of salt marsh for the Leslie Salt Company, J. O. Archibald, contractor of Redwood City, California said, "*LUBRIPLATE kept equipment rolling in mud, muck and water.*" You may never have an earth-moving job like this to do, but if you turn a wheel in any industry, you can profit by Mr. Archibald's experience.

1. LUBRIPLATE reduces friction and wear
2. LUBRIPLATE prevents rust and corrosion
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Write today for case histories of savings made through the use of LUBRIPLATE in your industry.

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Clean Sand and Gravel . . . a *Must* for Contractors

RELIANCE Roller Bearing Washing Screens with special scrubbing sections insure thorough breaking up of the material.

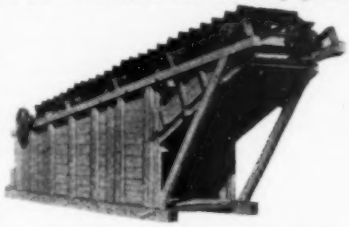
Write for Bulletin

. . . at new low cost with

RELIANCE Equipment

FOR fast economical production, use the high-efficiency washing and screening methods, now available in Reliance Machinery. Dynamic improvements in the past five years have made Reliance the standard equipment in modern installations everywhere. If you require a single machine, a combination of units or a complete plant, you can depend on Reliance experience for best results.

RELIANCE Paddle Type Wash Box with long gradual incline gives a clean, dewatered product that can be loaded or stored without segregation.



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. . . save fuel

...improve operations

in all types of kilns by providing the Burner with a continuous and simultaneous record of the oxygen, carbon dioxide, and combustibles in the flue gas. O_2 analysis serves to warn against excessive air supply; combustibles analysis indicates oxygen demand under all conditions; CO_2 analysis reflects state of carbonizing process. Uniform kiln operations made possible with ease. Savings effected pay for installation in short time. Send for literature.

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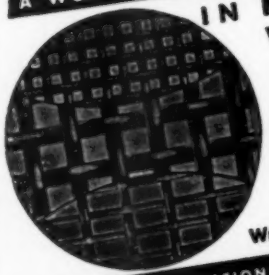

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. . . for a dependable, long-wearing, non-crystalizing Screen Cloth. Has "Nat-Aloy" Lock Crimp Meshes. Preferred for screening accuracy, economy and serviceability. All Sizes — All Meshes — All Gauges.

Write for Catalog No. 55

NATIONAL WIRE CLOTH CO., INC.
St. Paul, Minn.

save time . . .
save money with
Ehrsam electric manlifts

Rapid inter-floor transportation reduces employee fatigue, cuts down accidents, saves the worker's energy for his job.

Tools and light repair parts can be carried to speed up repairs, cut down production loss from breakdowns.

Pictured is the electrically operated, all-steel cage manlift made in 300- and 500-pound capacities. Write today for information about EHRSAM hand and electrically operated manlifts or employee elevators.

ADDRESS INQUIRIES TO
Department P
THE J. B. EHRSAM & SONS MFG. CO.
ESTABLISHED 1872 ENTERPRISE, KANSAS, U.S.A.

UP TO 99%?

Research Corp. Engineer — Yes sir, we are now in a position to offer our equipment and experience gained in other industries to cement plants for the removal of dust from cement plant furnace gases.
This experience enables us to guarantee any efficiency up to 99% depending on your individual requirements.

Plant Manager — What about draft loss?

Research Corp. Engineer — It's extremely low —only a few tenths of an inch of water.

Plant Manager — Do you actually guarantee performance?

Research Corp. Engineer — Absolutely. And you can depend upon Research Corporation because of our wide experience in the field of electrical precipitation. That's your yardstick of performance.

For more data on Research-installed Cottrells, send for Bulletin 500

RC 126

RESEARCH CORPORATION
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122 South Michigan Avenue, Chicago 3, Illinois

CORRECT REEVING IS ESSENTIAL
...for maximum bucket efficiency

PEAK bucket performance and service life depend on correct reeving. If your bucket is not digging a full load, increase the number of parts of line in the bucket. If overloading, reduce the number of parts to obtain maximum closing and opening speed. Proper reeving also can prevent breakage of teeth, lips or bucket structures.

Call on Blaw-Knox engineering service for the latest information on how to obtain increased bucket efficiency. Get complete details from Bulletin 2230-R.

BLAW-KNOX DIVISION
of Blaw-Knox Company
2004 Farmers Bank Building
Pittsburgh 22, Pa.

BLAW-KNOX CLAMSHELL BUCKETS
THE MOST COMPLETE RANGE OF SIZES AND TYPES

"Better Methods of Pneumatic Vibration"

Use a **CANNON** corrosion resistant Vibrator to keep materials moving through hoppers, chutes, bins and screens

Stainless steel body, hard chrome plated piston — all parts heat treated for durable performance.

Style A vibrators have a short stroke, impacting piston action.

Style EM vibrators are available in two new types of piston action:

"Quietype" has a long stroke that is completely air cushioned in each direction. Recommended for long periods of operation or when air pressures over 75 PSI are used.

"Hammer-action" impacts at mounting base only, the piston air cushions at the small plate end of the vibrator.

Write for Catalog with full details

CANNON Style "EM" Air-Cushioned Quiet Type Piston Action

CANNON VIBRATOR CO., 1105 Power Ave., Cleveland 14, Ohio

HETHERINGTON & BERNER

DREDGING PUMPS

performance-proven on the toughest jobs

H&B ESTABLISHED 1887

Hetherington & Berner sand and gravel pumps are available in two general types: *STANDARD*, (4", 6" and 8" sizes) with semi-steel parts, for ordinary working conditions and moderate heads; and *DREADNAUGHT*, (6", 8", 10", 12" and 15" sizes) with manganese steel parts, for heavy duty jobs with stringent head conditions.

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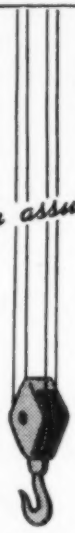
HETHERINGTON & BERNER INC.

717 Kentucky Ave. Indianapolis 7, Indiana

PRETESTED PREFORMED

your assurance of longer wire rope life!



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"HERCULES"
RED-STRAND
WIRE ROPE

Every wire that goes into "HERCULES" (Red-Strand) Wire Rope is first thoroughly tested in our Engineering Laboratory. Uniformity and safety, toughness and efficiency are thereby pre-determined to assure you of longer wire rope life!

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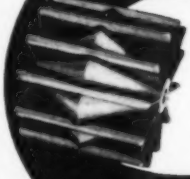
DEPENDABLE FOR 50 YEARS

Woven Wire ALLOY SCREENS

TWIN CITY IRON & WIRE CO.
St. Paul, Minnesota

increases belt life up to 400%*



Belt Saver PULLEY

Available in Diameter sizes ranging from 6" to 40"

Write for Bulletin 35-A

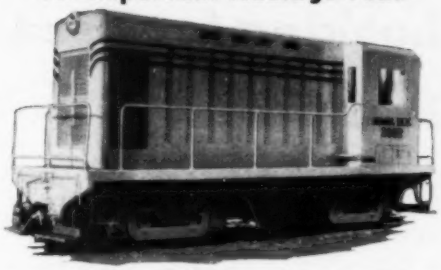
to Sprout, Waldron & Co., Inc., 6 Waldron St., Muncy, Pa.

126

Sprout-Waldron
Manufacturing Engineers
MUNCY PENNSYLVANIA

* Based on users' reports

Count on DAVENPORT RELIABILITY for Important Haulage Jobs



to Owners of H. K. PORTER LOCOMOTIVES

We have purchased the locomotive business of H. K. Porter Company, Inc. of Pittsburgh, Pa., and wish to assure all owners of H. K. Porter Locomotives that we are prepared to extend friendly and helpful service on repair parts — or duplicate locomotives to H. K. Porter design.

BRITISH GUIANA, S. A.—Davenport 54-Ton, 36" Gauge Diesel Electric Locomotive purchased by Aluminum Company of Canada, Ltd., for use in transport of bauxite ore by Demarera Bauxite Co. in British Guiana.

During a half century, Davenports have been built with pride, constantly improved and endowed with an over-plus of stamina which is reflected in extra years of dependable performance. You, too, will find Davenports to be utterly reliable—a source of complete haulage satisfaction.

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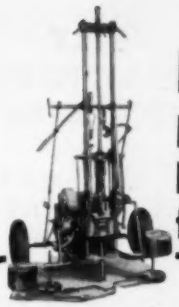
DAVENPORT LOCOMOTIVES

DAVENPORT LOCOMOTIVE WORKS
A DIVISION OF DAVENPORT BESLER CORP.
DAVENPORT, IOWA, U. S. A.



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with the

HOSSFELD ROCK DRILL

Drills blast holes at any angle from vertical to horizontal. Drills holes 1½" to 3" in diameter in any material. Powerful gas engine drills up to 4" per minute through limestone. One man operation. Easily movable from hole to hole on over-size rubber tires. Cuts drilling costs to as low as 30c per foot.

New Prospecting Attachment

WRITE FOR COMPLETE DETAILS

This new attachment makes the Hossfeld Rock Drill ideal for prospecting with accurate readings for depths to 70 feet. For complete information on the Rock Drill and Prospecting Attachment write today to Dept. P.

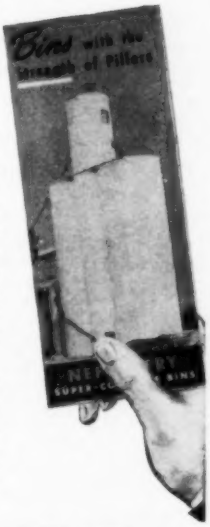
HOSSFELD MFG. COMPANY
WINONA — MINNESOTA

New Folder for the ASKING

You should have this folder if you are concerned with handling quantities of flowable bulk materials. It tells you about the Super-Concrete Staves of which Neff & Fry Storage Bins are constructed; how the reinforcement is pre-stressed; how the bins are engineered to specific requirements.

The folder contains data on bin capacities. It lists the 86 kinds of materials now being handled in Neff & Fry silos. It gives you the names of prominent users. It contains eight photos of typical installations.

Spend five minutes reading the folder and you'll be a lot better informed on above-ground materials handling. Mail your request for a copy now while the subject is on your mind.



THE NEFF & FRY CO.
278 ELM STREET • CAMDEN, OHIO

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A "NON-ELECTRIC" MAGNETIC SEPARATOR PULLEY GUARANTEED TO EQUAL OR EXCEED THE PERFORMANCE OF AN ELECTRO MAGNETIC SEPARATOR PULLEY

IT'S TRUE . . . ONLY HOMER HEAVY-DUTY Permanent "non-electric" Magnetic Pulleys are guaranteed to equal or exceed the performance of electro magnetic pulleys of same size and capacity.

HOMER Heavy-Duty Pulleys available in standard diameters from 12" to 30", with belt widths from 4" to 60". Write for descriptive data.

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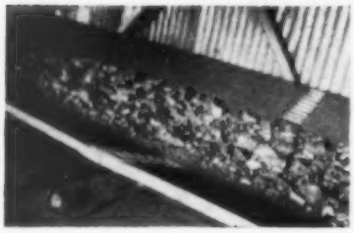
Producers of Magnetic Separator Equipment Since 1923

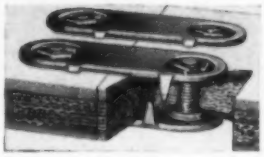
FLEXCO®

BELT FASTENERS and RIP PLATES



FOR HEAVY CONVEYOR AND ELEVATOR BELTS OF ANY WIDTH

- ★ FLEXCO Fasteners make tight butt joints of great strength and durability.
- ★ Trough naturally, operate smoothly through take-up pulleys.
- ★ Distribute strain uniformly.
- ★ Made of Steel, "Monel," "Everdur." Also "Promal" top plates.



Compression Grip distributes strain over whole plate area

★ FLEXCO Rip Plates are for bridging soft spots and FLEXCO Fasteners for patching or joining clean straight rips.

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FLEXIBLE STEEL LACING CO.

4623 Lexington St., Chicago 44, Illinois

Looking for Used Equipment?

Refer to the listings in this issue for a wide variety of used and surplus machinery and supplies.

PIT AND QUARRY

Research Department

538 South Clark St., Chicago, Ill.

Please send me catalogs and Prices concerning the following items checked below:

- ☐ Admixtures, Concrete
- ☐ Agitators, Slurry
- ☐ Aggregate-Bituminizing Plants
- ☐ Air Cleaners
- ☐ Air Compressors
- ☐ Asphalt Mixing Plants
- ☐ Asphalt Mixers
- ☐ Bag Filling and Weighing Machinery
- ☐ Bags, Cloth
- ☐ Bags, Paper
- ☐ Balls, Steel
- ☐ Barges, Steel
- ☐ Batching Equipment
- ☐ Belt Dressing
- ☐ Belt Fasteners
- ☐ Belting, Conveyor and Elevator
- ☐ Belting, Transmission
- ☐ Belt Tighteners
- ☐ Bin, Gates
- ☐ Bins
- ☐ Blasting Powder
- ☐ Blocks, Friction
- ☐ Bodies, Motor Truck
- ☐ Buckets, Clamshell
- ☐ Buckets, Conveyor and Elevator
- ☐ Buckets, Dragline
- ☐ Buckets, Orange Peel
- ☐ Cableways, Blackhlaw
- ☐ Calcining Machinery
- ☐ Caps, Blasting
- ☐ Car Dumpers
- ☐ Car Pullers and Movers
- ☐ Carriers, Belt
- ☐ Cars, Dump
- ☐ Cars, Kiln
- ☐ Castings
- ☐ Cement Colors
- ☐ Cement Plants, Belt
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- ☐ Chains, Transmission
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- ☐ Clutches
- ☐ Clutches, Magnetic
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- ☐ Concrete Brick Machines
- ☐ Concrete Joist Machines
- ☐ Concrete Stave Machines
- ☐ Concrete Plants, Ready Mix
- ☐ Cones, Washing
- ☐ Connectors, Wire Rope
- ☐ Conveyors, Apron
- ☐ Conveyors, Belt
- ☐ Conveyors, Concrete
- ☐ Conveyors, Screw
- ☐ Conveyors, Skip
- ☐ Coolers
- ☐ Coupling, Flexible
- ☐ Cranes, Locomotive
- ☐ Cranes, Overhead Traveling
- ☐ Cranes, Truck
- ☐ Crushers, Cone
- ☐ Crushers, Gyratory
- ☐ Crushers, Hammer
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- ☐ Crushers, Ring
- ☐ Crushers, Roll
- ☐ Cutter Heads, Dredging
- ☐ Derricks
- ☐ Draglines, Cableway
- ☐ Draglines, Revolving Boom
- ☐ Dredges, Hydraulic
- ☐ Dredges, Ladder
- ☐ Drills, Air
- ☐ Drills, Blast Hole
- ☐ Drills, Diamond
- ☐ Drills, Hand Hammer
- ☐ Drills, Sharpening Machinery
- ☐ Dryers, Rotary
- ☐ Dust Collecting Systems
- ☐ Dynamite
- ☐ Elevators, Bucket
- ☐ Engines, Diesel
- ☐ Engines, Gasoline
- ☐ Engines, Hoisting
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- ☐ Feeders
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- ☐ Filters, Oil
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- ☐ Fuses, Detonating
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- ☐ Hose, Suction
- ☐ Hydrators, Lime
- ☐ Idlers, Conveyor
- ☐ Kettles, Calcining
- ☐ Kilns, High Pressure Steam
- ☐ Kilns, Rotary
- ☐ Kilns, Vertical
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- ☐ Lime Putty Plants
- ☐ Lining, Kiln
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- ☐ Loaders and Unloaders, Box Car
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- ☐ Locomotives, Gasoline
- ☐ Locomotives, Steam
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- ☐ Lubricants
- ☐ Meters, Water
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- ☐ Mills, Compartment
- ☐ Mills, Tube
- ☐ Mixers, Concrete
- ☐ Molds, Concrete
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- ☐ Motor Trucks, Ready-Mixed Concrete
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- ☐ Nozzles, Spray
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- ☐ Pumps, Dredge
- ☐ Pumps, Slurry
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- ☐ Rope, Wire
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- ☐ Screens, Revolving
- ☐ Screens, Shaking
- ☐ Screens, Vibrating
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- ☐ Skips
- ☐ Sleeves, Dredge
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- ☐ Speed Reducers and Gears
- ☐ Sprockets
- ☐ Stokers
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- ☐ Tanks, Sand Settling
- ☐ Testing Equipment
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- ☐ Track, Portable
- ☐ Track, Shifters
- ☐ Tractors, Crawler
- ☐ Tramways, Aerial
- ☐ Trippers, Belt
- ☐ Trippers, Tramway
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- ☐ Valves
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Firm Name ..... *Individual* .....

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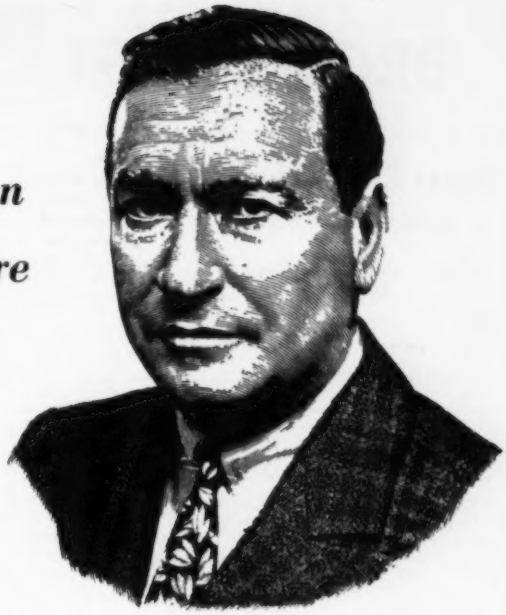
"You Build for your own and your country's future when you save..."



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President, U. S. Steel Corporation

"A free economy, such as ours, is built on the savings of the people. And the future security of America depends on the initiative and the growth of every citizen. We in U. S. Steel encourage our employees to join the Payroll Savings Plan, and we are proud that the National Tube Company, one of our subsidiaries, was the first of the large industrial companies of the nation in 1950 to have more than 80% of its employees participating. Remember, you build for your own and your country's future when you save."

Mr. Fairless is not expressing a personal opinion, nor is he speaking for other far-seeing executives when he tells you that our economy is built on the savings of the people and a man builds for his own and his country's future when he saves.

Actually, Mr. Fairless is merely putting in words the thoughts and action of the millions of employed men and women who *now hold* more than 50 billion dollars in U.S. Savings Bonds.

$50,000,000,000! Who *sold* all those bonds to millions of people? The answer is, nobody sold them.

80% of the employees of the National Tube Company ... 75% of the employees of Carnegie-Illinois Steel Company ... thousands of employees of other U.S. Steel subsidiaries ... more than 8 million employees of other companies bought U.S. Savings Bonds and are buying them every month on the easy, automatic Payroll Savings Plan. Their employers merely offered these men and women an opportunity to save for their future. There was no pressure, no emotional appeal.

How does employee participation in *your* Payroll Savings Plan match up with the 80% of National Tube, the 75% of Carnegie-Illinois? Or, perhaps you are one of the relatively few large companies that do not have a Plan? In either case, wire or write, Savings Bond Division, U.S. Treasury Department, Suite 700, Washington Bldg., Washington, D.C. Your State Director is ready to help you with a package plan—application blanks, promotional material, practical suggestions and all the personal assistance you may desire.

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WANTED—Well qualified, capable man as Assistant Superintendent Portland Cement Mill in Ohio.

Address Box No. 207—c/o Pit & Quarry Publications
538 South Clark Street Chicago 5, Illinois

giving full particulars concerning age, experience, etc. Replies will be treated confidentially.

Diamond Core Drilling
CONTRACTORS
Fireclays, coal, limestone, gravel deposits, all minerals. Blast hole drilling.

MOTT CORE DRILLING CO.
Huntington, West Virginia

WANTED

CEMENT PLANT SUPERINTENDENT to take charge of the operations of a cement plant in Eastern United States. Should be capable executive as well as competent engineer. State age, experience, references, and salary expected.

Write Box No. R 6, c/o Pit & Quarry Publications
538 S. Clark Street, Chicago 5, Illinois

WANTED

Rock Crushing and Milling Manufacturer requires graduate Engineer for production work. Industrial experience in crushing and milling essential. Mechanical aptitude desirable. Applicant to include all details and salary desired in first letter.

Box No. M 2, c/o Pit and Quarry Publications
538 So. Clark St., Chicago 5, Illinois

CORE DRILLING
ANYWHERE
We look into the earth
PENNSYLVANIA
DRILLING COMPANY
PITTSBURGH 20, PA.

WANTED

10 x 18 Universal Road Machinery Jaw Crusher
No. 1 Sturtevant Ring Roll Mill
State price, age, serial number, location and operating condition.

Box No. 203, c/o Pit and Quarry Publications
538 So. Clark St. Chicago 5, Illinois

WANTED

Log Washer for Sand & Gravel Plant, preferably Eagle, capable of handling at least 150 tons per hour. Good condition.

Also Scrubber for Sand & Gravel Plant, preferably a Telsmith make in 7 foot or 9 foot. Good condition. Write giving full particulars as to make, model, capacity, age, condition, price, etc. to:

DISTRICT SAND & GRAVEL CO.
P.O. Box 4671 Anacostia 20, D.C.

EXECUTIVE WANTED

Medium sized Mid-Western Crushing and Road Machinery Manufacturer ($1,000,000 sales per year) would like to contact executive type man between the ages of 40 to 55 to fill position of top executive. Should have administrative type experience pertaining to foundry, machine shop, welding shop, assembly plant and sales engineering to completely qualify.

Box No. R 7
c/o Pit and Quarry Publications
538 So. Clark St., Chicago 5, Illinois

WANTED

Sauerman Slackline—1½ Yd., 2 drum, rapid shifting. Complete. Give condition, location and best price—in first letter.

PETER DE YOUNG
Ingleside, Illinois

ROTARY KILNS
WANTED TO BUY

Box 212, c/o Pit and Quarry
538 So. Clark Street, Chicago, Illinois

WANTED

National organization with over 20 plants, desires graduate engineer for position as Assistant Plant Manager following a period of approximately one year or less as Plant Engineer to establish himself and Plant Engineering Department. Experience in gypsum, lime or cement preferred, but not required. Plant is integrated from raw materials (quarry) to finished product, employing approximately 275 people. Submit full details, including salary required, to:

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538 So. Clark St., Chicago 5, Illinois

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Man or contractor experienced in operating a Rock Crushing Plant and is familiar with making various fine granulations and separations for mining operation in west central Arizona. Also advise if they own any rock handling equipment or trucks.

Box No. 210, c/o Pit and Quarry Publications
538 So. State Street Chicago 5, Illinois

WANTED

Late Model Bucyrus Erie 120B or 170B all Electric shovel, less than 4 years.

The Chas. M. Ingersoll Co.
19030 Detroit Rd. Rocky River, Ohio
EDison 1-1010

WE WANT TO BUY
HYSTER AND CARCO TOWING WINCHES

SEND COMPLETE DETAILS

NATIONWIDE SUPPLY CO.
RAPID CITY, SOUTH DAKOTA

TEL. 204 & 2034
ASK FOR STEVE MORRISSEY

WANTED

170 B BUCYRUS ERIE Straight Shovel
4500 Manitowoc Dragline
42 T Bucyrus Erie Drill

Box No. 209—c/o Pit and Quarry Publications
538 South Clark Street Chicago 5, Illinois

WANTED

Late Model 1½ Yard shovel front for Model 6 Northwest machine. Write to:

CRYSTAL LAKE TRUCKING & EXCAVATING COMPANY
McHenry Avenue Crystal Lake, Illinois

DEPENDABLE USED EQUIPMENT

OWNED BY US — IN OUR STOCK

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Tractors & Earth Moving

Intl. TD-18—D.D. PCU—Angledozer & Scraper	$ 8,500
Intl. TD-18 Bucyrus Erie Hyd. Angledozer	6,000
Cat. D-7 D.D. PCU & Bulldozer	3,500
Intl. TD-14 D.D. PCU & 6 Yd. Scraper	7,000
Intl. TD-14 Bucyrus Erie Hyd. Angledozer	5,500
Intl. TD-9 Isaacson Hyd. Angledozer	4,500
8-10 Yd. Wagon Scraper	2,500
14-17 Yd. Wagon Scraper	4,500
Mississippi 10 Yd. Wagons—Intl. I. D.-9 Diesel Tractors — New	6,500
Super C Tournapulls & Scrapers	6,500
Woolridge Terra Cobras & Scrapers	11,000
Gradall Excavator—Intl. Truck	10,000
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White Front End Loader—Case D. I. Tractor	1,500
Hough HLD Payloader—Diesel	4,300
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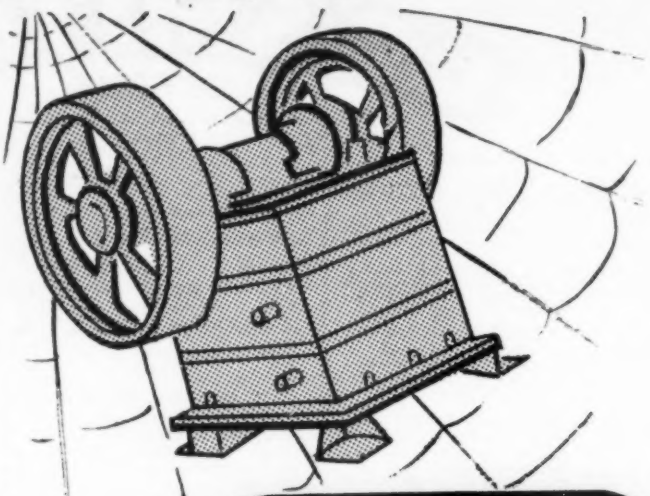

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SECO 4' x 10' 2-deck Vibrating screen. Like new. $1000.00. Another one, good condition. $750.00.

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IOWA, 36" x 8 ft. Apron Feeder, complete. $1250.00.

BYERS #83 latest ¾ cu. yd. shovel. Like new. $8250.00.

This is only partial list. We specialize in rock quarry equipment. Let us know your requirements.

LORAIN #77 1¼ cu. yd. Shovel-Crane. Diesel $13,000.00.

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LIPPMANN 42 ft. Portable Conveyor. 20" belt. Gasoline. 2-wheel rubber tired trailer. $1300.00.

BARBER-GREEN 82-A. Buket Loader. Used 6 months. $4750.00.

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INTERNATIONAL UD-18 100 H.P. Diesel Power Unit. New kld. Bearings.-$1750.00.

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CONVEYORS—IDLERS

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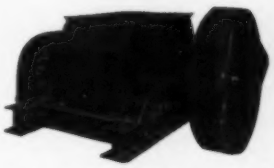
CINDER, PUMICE, PERLITE CRUSHERS



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Complete with Hopper

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3-roll troughing idlers for these sizes:

14" belt	$20.00	24" belt	$23.00
16" belt	21.00	30" belt	24.00
18" belt	22.00	36" belt	25.00
		42" belt	$26.00

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24" belt	$ 9.00	36" belt	$10.50
30" belt	10.00	42" belt	11.50
		48" belt	$12.50

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Build your own conveyor; we have in stock standard sections, head and tail pulleys, screw takeups, gravity takeups, troughing and picking idlers and return rollers, belting, drives, speed reducers, sheaves, etc. Phone us your order.

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20"	5	1/8"	1/32"
24"	4	1/8"	1/32"
24"	5	1/8"	1/32"
26"	5	1/8"	1/32"
30"	5	1/8"	1/16"
30"	6	1/8"	1/16"

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6600 Ft. 36, 42, 48 & 60 In. Wide

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4—100 KW G.M. 3/60/220/440 V.
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40 ton Orton diesel locomotive crane
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V-Belt Drive
Capacity—120-160 TPH
Requires 75 HP—Weighs 44,000 lbs.

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Grooved Flywheel Pulley
New Concaves—New Mantle
Excellent Condition

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STRONG CARCASS — Constructed of finest quality 28 and 32 ounce tough cotton duck, properly treated and impregnated to avoid mildew from moisture and atmospheric conditions. Each ply thoroughly embedded in rubber to prevent ply separation.

FLEXIBILITY — Careful attention has been given in the construction of all belts to have the proper flexibility assuring the following desirable features; troughs easily, runs true on all idlers, gouge resistant, excellent for long and short hauls and slope installations.

Avoid delays in your production schedules!

We carry in stock for your immediate requirements, Conveyor Belting in widths from 8 inches to 48 inches.

Width	Ply	Thickness Top Cover	Thickness Bottom Cover	Type of Duck Carcass
8"	4	1/16"	1/32"	28 Oz.
10"	4	1/16"	1/32"	28 Oz.
12"	4	1/16"	1/32"	28 Oz.
14"	4	1/16"	1/32"	28 Oz.
16"	4	1/8"	1/32"	28 Oz.
18"	4	1/8"	1/32"	28 Oz.
20"	4	1/8"	1/32"	28 Oz.
20"	5	1/8"	1/32"	28 Oz.
24"	4	1/8"	1/32"	28 Oz.
24"	5	1/8"	1/32"	28 Oz.
26"	5	1/8"	1/32"	28 Oz.
30"	4	1/8"	1/16"	32 Oz.
30"	5	1/8"	1/16"	32 Oz.
30"	6	1/8"	1/16"	32 Oz.
36"	6	1/8"	1/16"	32 Oz.
42"	5	1/8"	1/16"	32 Oz.
48"	8	1/8"	1/16"	32 Oz.

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Model E Merrick Weighometer for 24" belt.
2 XC & 3 XB Gruendler Hammermills.
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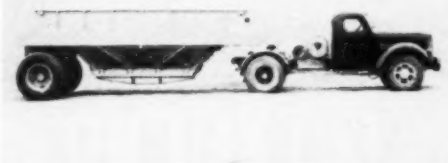

Shown above: LANDIS 18 yard off-the-road wide opening air door. Length 22'9", height 7'9", width 8' overall. One door opening 3'6" by 8" clear. Used for hauling bulky material such as slag, broken stone, etc. Use any type loader.

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there's a SCHRAMM Compressor to fit your air needs!

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MODEL 105 . . . Highly portable compressor for average construction jobs and auxiliary on large tools.

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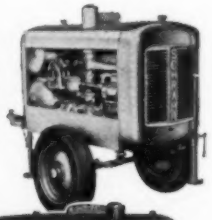
The SCHRAMM Line of Construction Tools includes: Rock Drills . . . Wagon Drills . . . Paving Breakers . . . Clay and Trench Spades . . . Backfill and Tie Tampers . . . Track Spike and Form Pin Drivers . . . Sheeting Drivers . . . Chain Saws . . . Concrete Vibrators . . . Paint Sprays . . . Tools for Breakers and Diggers . . . Air Hose and Accessories.

MODELS 20 and 35



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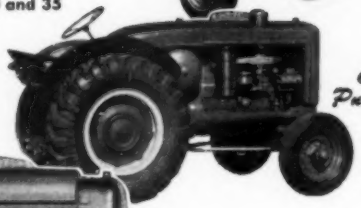

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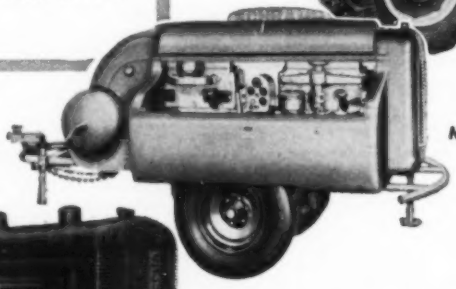

MODEL 105

MODELS 210, 315 and 600

REMEMBER. There's a Schramm Air Compressor and auxiliary tools available for your many compressed air needs. For complete details, write us today.

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As the white outline indicates, a standard unit of much greater frame size would be required to do the work of Speedaire. The unit operates a Ruggles-Coles Dryer, built by the Herdings Co., Inc., York, Pa.

SPEEDAIRE ... for 3 years 24 hours a day

THREE years ago, a South Carolina kaolin plant installed one of Cleveland's new fan-cooled Speedaire worm gear speed reducers to drive a rotary kiln. It has operated almost continuously, day and night, ever since, with unimpaired efficiency in spite of the heat and dust.

As the photograph indicates, a limited area was available to install a speed reducer, but it was entirely adequate for Speedaire, because it occupies 42% less space than a conventional worm gear drive of comparable capacity. Speedaire also saved $128.50 on initial cost.

Because Speedaire is fan-cooled, it will do more work—will deliver up to *double the horsepower* of standard worm units of equal frame size, at usual motor speeds. It can be installed economically on many applications where other types have been used heretofore—giving you the advantage of a compact right-angle drive. Speedaire gives the same long, trouble-free service characteristic of all Clevelands.

For full description, send for Catalog 300. The Cleveland Worm & Gear Co., 3280 East 80th St., Cleveland 4, Ohio.

Affiliate: The Farval Corporation, Centralized Systems of Lubrication.
In Canada: Peacock Brothers, Limited.

CLEVELAND
Worm Gear
Speed Reducers

You hear it from coast to coast...*

"It's Blue Brutes For My Money!"

***PENNSYLVANIA**

A 315' Portable Compressor and UMW Wagon Drill, one of many Blue Brute teams owned by Cramer Construction Co. of Lebanon, Pa. Pres. G. B. Cramer writes: **"We have used Blue Brutes for several years, and on our Lebanon Veterans' Hospital job have five Blue Brute Compressors powering Worthington Wagon Drills and Rock Hammers. As evidence of their entirely satisfactory performance we recently purchased another 315' Blue Brute Compressor."**

***OHIO**

In Waterville, Ohio, the Crawford Steel Construction Co., Inc., of Cincinnati, erected the structural steel on the new highway bridge across the Maumee River. Company official J. A. Crawford says: **"Our 210' Blue Brute Compressor is efficient, well constructed and rugged. It has given us excellent service, and we are more than willing to recommend it highly . . . This first experience with your products is evidence to us of Blue Brutes' superiority.**

***OREGON**

It's another Blue Brute UMW Wagon Drill. Ready to swing into action at any angle, it is here helping to cut through a road cut where the timber grows tallest. The Kuckenberg Construction Company of Portland, Ore., are the owners and the report from this firm says they **"wish all their other machines on the job were as good . . . and are going to change to Blue Brutes in future replacements."**

***WISCONSIN**

Opening up a new limestone quarry in Sussex, Wisconsin, is easy work for these rugged, hard-hitting Blue Brute team-mates. The fast, versatile UMW Wagon Drill is drilling 6-foot holes for explosive charges. Power source is a 315' Blue Brute Compressor, that gets all the air out of every drop of fuel. Vice-President Lloyd Wolf of the Quality Limestone Corporation, reports: **"After thorough investigation we decided Worthington equipment was best . . . They are fine machines."**

From the Atlantic to the Pacific you'll find Blue Brute owners — on every type of construction project, from the smallest to the largest — glad to tell you of the cost-cutting, trouble-free performance that is helping make estimates pay handsomely.

There are a lot of sound reasons for this country-wide acclaim — all adding up to the fact that *there's more worth in Worthington*. Your nearby Worthington-Blue Brute Distributor is ready with those reasons, and can make immediate deliveries. See him, or write us direct.

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